TM 11-6125-224-25

DEPARTMENT OF THE ARMY TECHNICAL MANUAL

ORGANIZATIONAL, DS, GS, AND DEPOT MAINTENANCE MANUAL

MOTOR GENERATOR PU-572/A

HEADQUARTERS, DEPARTMENT OF THE ARMY

JUNE 1967

WARNING

DANGEROUS VOLTAGES EXIST IN THIS EQUIPMENT

DON'T TAKE CHANCES!

Serious injury or death may result from contact with the 115/200 **volts ac** output of Motor-Generator PU-572/A. Be extremely cautious when working with the equipment.

TECHNICAL MANUAL)
)
NO. 11-6125-224-25)

HEADQUARTERS,
DEPARTMENT OF THE ARMY
WASHINGTON, D. C., 22 June 1967

MOTOR-GENERATOR PU-572/A

*This manual supersedes so much of TM 11-6125-224-25P, 29 December 1964, as pertains to the maintenance allocation chart and allocation of tools for maintenance functions.

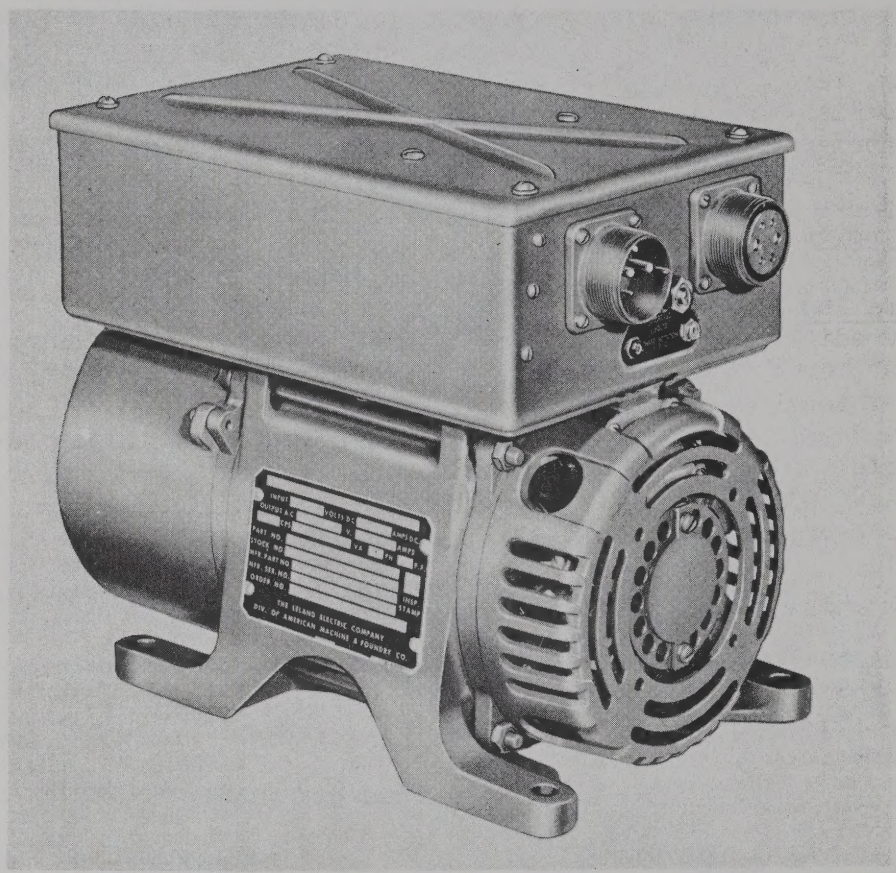


Figure 1-1. Motor-Generator PU-572/A.

SECTION I

INTRODUCTION AND DESCRIPTION

1-1. GENERAL.

1-2. SCOPE. This manual describes Motor-Generator PU-572/A (inverter) (fig. 1-1), and provides information on direct support (DS), general support (GS), and depot maintenance, which includes troubleshooting, testing, repairing the equipment, and replacing maintenance parts. It also lists the tools and test equipment required for each category of maintenance. The appendixes include references, the basic issue items list, and the maintenance allocation chart.

1-3. INDEXES OF EQUIPMENT PUBLICATIONS.

a. DA Pam 310-4. Refer to DA Pam 310-4 to determine whether there are new editions, changes, or additional publications pertaining to the equipment. Department of the Army Pamphlet No. 310-4 is a current index of technical manuals, technical bulletins, supply manuals (types 7, 8, and 9), supply bulletins, and lubrication orders that are available through publications supply channels. The index lists the individual parts (-10, -20, -35P, etc) and the latest changes and revisions of each equipment publication.

b. DA Pam 310-7. Refer to DA Pam 310-7 to determine whether there are Modification Work Orders (MWO's) pertaining to the equipment. Department of the Army Pamphlet No. 310-7 lists all authorized Department of the Army modification work orders, identifying the type, model, series, and Federal stock number of the item to be modified; number, date, and classification of the MWO; category of maintenance authorized to perform the modification; and the man-hours required to apply the modification to each item.

1-4. FORMS AND RECORDS.

1-4.1. REPORTS OF MAINTENANCE AND EQUIPMENT IMPROVEMENT RECOMMENDATIONS. Use equipment forms and records in accordance with instructions in TM 38-750.

1-4.2. REPORT OF DAMAGED OR IMPROPER SHIPMENT. Fill out and forward DD Form 6 (Report of Damaged or Improper Shipment), as prescribed in AR 700-58 (Army), NAVSUP Publication 378 (Navy), and AFR 71-4 (Air Force).

1-4.3. REPORTING OF EQUIPMENT MANUAL IMPROVEMENTS. Report of errors, omissions, and recommendations for improving this manual by the individual user is encouraged. Reports should be submitted on DA Form 2028 (Recommended Changes to DA Publications) and forwarded direct to Commanding General, U. S. Army Electronics Command, ATTN: AMSEL-MR-NMP-AD, Fort Monmouth, New Jersey 07703.

1-5. DESCRIPTION. (See figure 1-2.)

1-6. The inverter is a rotary motor-generator with a laminated yoke assembly, having a common shaft for the armature and rotor. The prime mover is a compensated compound wound DC motor having a pole face winding for stabilizing the operation. The speed of the motor is controlled by the electrical circuit of the regulator.

1-7. The unit is equipped with noise filter circuits in the DC input and AC output lines.

1-8. Two built-in carbon pile amplifiers mounted in the voltage and frequency control (5) furnish automatic voltage and frequency regulation by controlling the current in the exciter winding (for voltage control) and in the shunt field of the motor (for frequency control). An externally adjustable rheostat (2) is also provided to permit manual setting of the AC voltage. Frequency setting is made by adjusting rheostat (4).

1-9. An electrical connector (1) is provided for all input connections; electrical connector (3) is provided for all output connections.

1-10. PRINCIPLES OF OPERATION. (See figures 3-2 and 3-3.)

1-11. VOLTAGE REGULATION.

1-12. The sampling potential is taken from the output terminals of the machine and applied to the filament of a temperature sensitive diode after having been transformed to a level of about 4.5 volts (RMS). The tungsten filament has emission characteristics that are stable timewise and is relatively free from effects of ambient temperature variations. In the normal range of operation the filament will operate at 2300° Kelvin (approx.) and it is protected from the effects of external temperature variations by the evacuated envelope.

1-13. Emission from the filament increases sharply after the threshold voltage has been exceeded, thus producing a relationship between filament voltage and plate conduction sufficient to realize a gain of approximately 30:1.

1-14. The diode plate potential variation represents a 30:1 amplification of the variations in the applied filament potential. This representation is on an RMS basis since the changes are a function of filament heat. In this way, spurious effects are nullified and a true representation of the RMS value of the applied potential are presented to the grid of an amplifier tube following the diode.

1-15. A control coil of the voltage regulating carbon pile is connected in the plate circuit of the amplifier tube, which then produces changes in the pile resistance to effect voltage control.

1-16. Plate potential is provided from two full wave rectifiers, the positive portion (relative to ground) is heavily filtered, and the negative portion is lightly filtered. Since the plate supply is lightly filtered on the negative side, this condition produces a characteristic in the output potential which allows it to vary in proportion to the changes in applied AC potential but somewhat smoothed. The sharp changes in level are bypassed to the amplifier tube by an RC network, thus giving anticipation to any permanent changes in voltage level and provides a means to attain quick response.

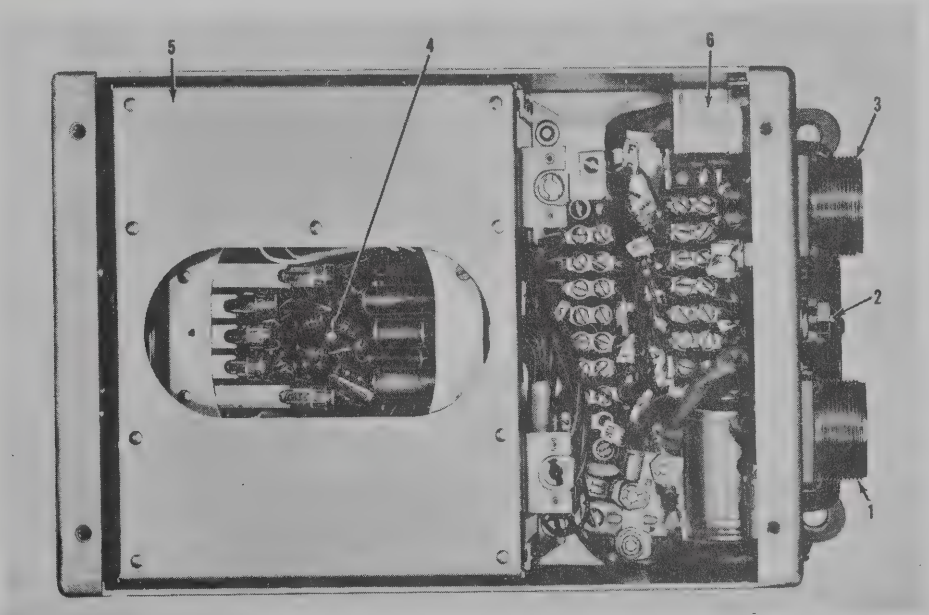
1-17. FAIL-SAFE CHARACTERISTICS. To prevent a runaway voltage in the event of a voltage sensing tube failure, the tube is designed to short filament to plate if the filament breaks. If one of the other tubes fails, (filament open) control is lost also, and in both cases, the voltage drops to about 65 volts.

1-18. FREQUENCY CONTROL. Frequency control is accomplished in the driving source (motor field); monitoring, through speed or frequency. In this case it is through the frequency and is accomplished by sensing a potential (AC) developed across a reactance of a series L-C circuit tuned to approximately 525 CPS. The value of the AC potential developed is proportional to the frequency and will continue to be constant for any one frequency so long as the values of "L" and "C" remain constant. This potential is then rectified and compared with another potential obtained by rectification of the stabilized AC output potential. Thus, the difference between these potentials becomes a representation of the frequency, the level of which is primarily determined by the constancy of the AC voltage but not its level. The output voltage level of the machine may be adjusted without effecting a frequency change. Using the potential thus derived, amplification is accomplished by a triode. The control coil of a carbon pile is connected in the plate circuit as one part of a two part circuit. The second circuit is connected across the DC supply in magnetic opposition. This arrangement provides a substantial field for starting and also provides a fail-safe characteristic in case of tube failure. (Speed drops to 75 percent of nominal). Anticipation of changes in input voltage and electrical load are coupled into the speed control amplifier circuit by means of RC networks.

1-19. PURPOSE.

1-20. The PU-572/A is an airborne unit used for the conversion of the aircraft's 27.5-volt DC power supply to single or three-phase, 400-cycle, AC power.

1-21. ADJUSTMENT RANGE. Refer to figure 1-3 for both voltage and frequency adjustment ranges.



1. Electrical connector (input)
2. Adjusting rheostat (voltage)
3. Electrical connector (output)
4. Adjusting rheostat (frequency)
5. Voltage frequency control
6. Under voltage relay

Figure 1-2. Control Box

	DC Input	Freq.	Voltage	Load	Power Factor
VOLTAGE ADJUSTMENT RANGE:	26 29	400±3 400±3	125 109	FL NL	80% Lag or 100%
FREQUENCY ADJUSTMENT RANGE:	26 29	408 392	115 115	FL NL	80% Lag or 100%

Figure 1-3. Adjustment Range

a. As the operating conditions are changed from 26 VDC input full load, 1.0 to 0.8 power factor to 30 VDC input no load, the maximum voltage change permissible is 2.0 volts per phase.

b. As the operating conditions are changed from 26 VDC input full load, 1.0 to 0.8 power factor to 29 VDC input no load, the maximum frequency change permissible is 8 CPS.

1-22. TECHNICAL CHARACTERISTICS. (Refer to figure 1-4.)

DC INPUT	
Rated	27.5
Maximum input voltage	29.0
Minimum input voltage	26.0
Amperes full load (3 phase)	63.8
Amperes full load (1 phase)	67.0
Amperes no load	27.0
AC OUTPUT (Single-Phase)	
Volt amperes	750
Volt nominal	115
Amperes	6.5
Efficiency (minimum) at unity power factor	40 percent
Range of voltage adjustment	110 to 120
Power factor	0.80 lag to 0.95 lead
Range of frequency adjustment	390 to 410
AC OUTPUT (Three-Phase)	
Volt amperes	750
Volts nominal	115/200
Amperes (line)	3.7/2.1
Efficiency minimum unity power factor	42 percent
Range of voltage adjustment	110 to 120 (DELTA) 190 to 210 (WYE)
Power factor	0.80 lag to 0.95 lead
Range of frequency adjustment	390 to 410 cycles
REGULATION (26 to 29 VOLTS INPUT - NO LOAD TO FULL LOAD)	
Single and Three-Phase	
Voltage minimum	113
Voltage maximum	117
DUTY (Continuous)	0-50,000 feet, 750 VA, single or three-phase
ROTATION	Counterclockwise viewed from DC end
ARMATURE SPEED	8,000 RPM
WEIGHT	34 LBS

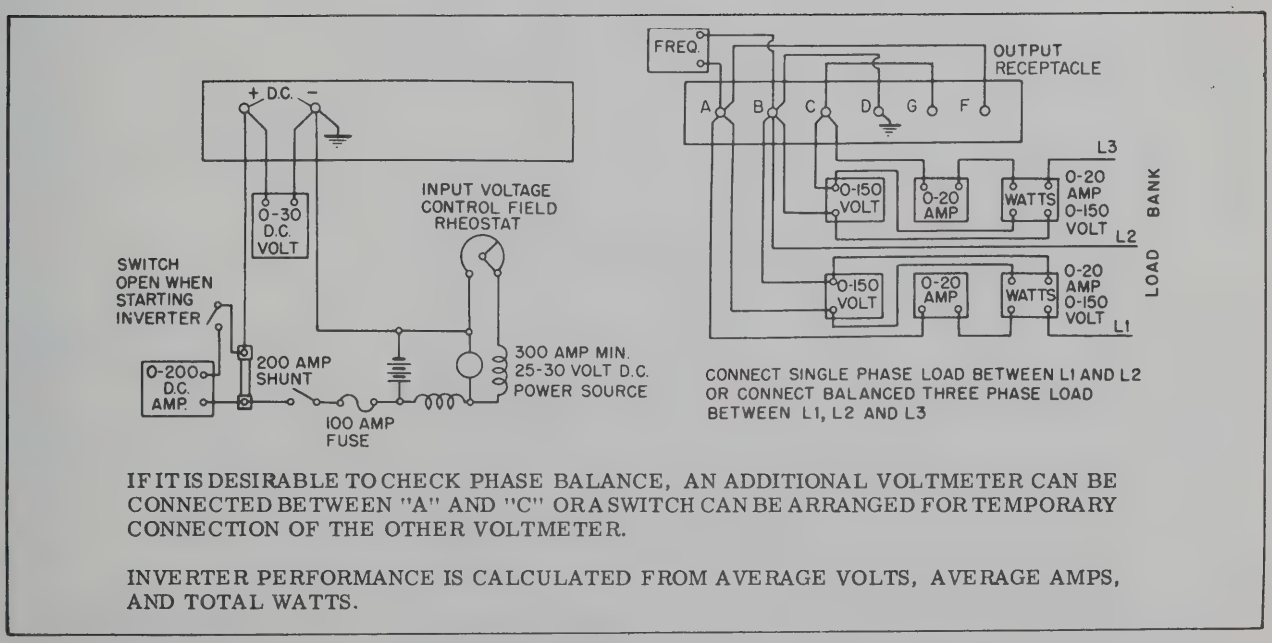
Figure 1-4. Leading Particulars

SECTION II

TEST EQUIPMENT AND SPECIAL TOOLS

2-1. TEST EQUIPMENT REQUIRED.

2-2. The equipment listed in appendix C, maintenance allocation chart, is required for troubleshooting, testing, and repairing the inverter.



IF IT IS DESIRABLE TO CHECK PHASE BALANCE, AN ADDITIONAL VOLTMETER CAN BE CONNECTED BETWEEN "A" AND "C" OR A SWITCH CAN BE ARRANGED FOR TEMPORARY CONNECTION OF THE OTHER VOLTMETER.

INVERTER PERFORMANCE IS CALCULATED FROM AVERAGE VOLTS, AVERAGE AMPS, AND TOTAL WATTS.

Figure 2-1. Load Bank and Test Circuit

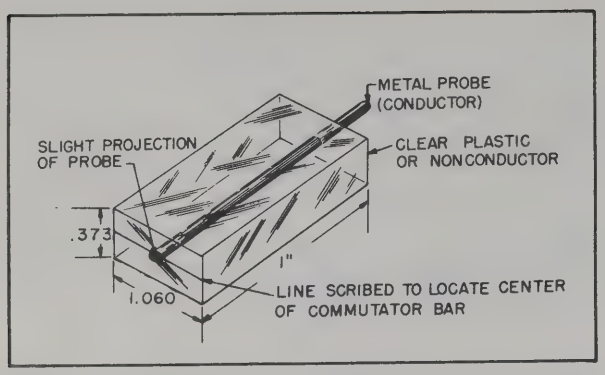


Figure 2-2. Dummy Brushes

2-3. Since many panel type frequency meters are sensitive to voltage and wave form, the frequency meter should be checked against a vibrating reed or tachometer.

NOTE

All meters should be accurate to within 1 percent of the full scale reading.

2-4. If a Test Set, Motor-Generator AN/GSM- is not available, set up an external load bank in accordance with figure 2-1.

2-5. SPECIAL TOOLS.

2-6. The only special tools required for servicing or overhauling this equipment are dummy brushes. Refer to figure 2-2 for dummy brush dimensions and specifications.

2-7. CABLE FABRICATION.

a. Provide an AN3106-22-5P or AN3108-22-5P electrical connector with NO. 12 AWG insulated wire to "B" and "E" terminals and NO. 16 AWG insulated wire to "A", "C", "D" and "F" terminals for AC connections.

b. Provide an AN3106-22-6S or AN3108-22-6S electrical connector with NO. 8 AWG insulated wire to "A" and "C" terminals for DC connections and NO. 16 AWG insulated wire to "B" terminal for keep alive connections.

SECTION III

TROUBLESHOOTING

3-1. GENERAL.

3-2. Maintenance beyond the capabilities of the field is the replacement of defective parts, short of a complete overhaul. Determine usability of components by making checks described in figure 3-1. All references made in figure 3-1 are to the wiring diagrams, figures 3-2 and 3-3.

3-3. WIRING DIAGRAM.

3-4. Figures 3-2 and 3-3 provide detailed wiring information.

3-5. VOLTAGE, CONTINUITY AND RESISTANCE CHECK.

Trouble	Probable Cause	Remedy
HIGH OUTPUT VOLTAGE (NOT REGULATED)	6021 (V3) tube shorted.	Replace tube.
	Voltage rheostat circuit open.	Replace rheostat.
	Capacitor on AC end shield shorted (C6).	Replace capacitor.
	Transformer secondary winding open.	Replace transformer.
	6352 (V5) tube filament open and not fail-safe.	Replace tube.
	Sticking or improperly adjusted voltage carbon pile amplifier.	Replace voltage carbon pile amplifier.
	Defective Relay (K1).	Replace relay.
LOW OUTPUT VOLTAGE (NOT REGULATED)	Defective 6021 (V3) tube.	Replace tube.
	Defective 6352 (V5) tube.	Replace tube.
	Voltage carbon pile amplifier sticking or improperly adjusted.	Clean and adjust voltage carbon pile amplifier.
	Open voltage carbon pile coil.	Replace voltage carbon pile coil.
NO OUTPUT VOLTAGE	Open circuit to contact of voltage carbon pile amplifier.	Clean and/or replace carbon amplifier.
	High resistance in carbon pile due to burned carbon pile discs or improper adjustment.	Replace carbon pile discs and adjust amplifier.
POOR VOLTAGE REGULATION	6021 (V3) tube defective.	Replace tube.
	6352 (V5) tube defective.	Replace tube.
POOR REGULATION (NO LOAD TO FULL LOAD)	Voltage carbon pile amplifier sticking or improperly adjusted.	Clean and adjust carbon pile amplifier.
	Voltage adjustment; rheostat intermittent or dirty contact arm within rheostat.	Replace rheostat.
EXCESSIVE OUTPUT FREQUENCY (NOT ADJUSTABLE)	Frequency amplifier coil (red-yellow leads) open.	Replace amplifier coil.

Figure 3-1. Analyzing Trouble

Trouble	Probable Cause	Remedy
EXCESSIVE OUTPUT FREQUENCY (NOT ADJUSTABLE (Cont'd.)	Shorted 6021 (V3) tube.	Replace tube.
	Shorted 5896 (V4) tube.	Replace tube.
	Reactor assembly shorted, capacitor to case.	Replace reactor.
	Frequency carbon pile amplifier shorting or not adjusted.	Adjust carbon pile amplifier or replace.
	Severely damaged frequency carbon pile discs.	Replace carbon pile discs.
	Bad 5896 (V4) tube and/or 6021 (V3) tube.	Replace tubes.
LOW OUTPUT FREQUENCY	Tube filament series open preventing normal tube warm-up.	Replace tubes as required.
	Open series resistor in heater circuit.	Check and replace resistor.
	Defective 6021 (V3) tube.	Replace tube.
	Frequency amplifier coil (blue and white lead) open.	Replace amplifier coil.
	Defective 5896 (V4) tube.	Replace tube.
	Frequency carbon pile amplifier.	Clean and/or adjust.
FREQUENCY UNSTABLE (ADJUSTABLE)	Defective 5896 (V4) tube.	Replace tube.
	Reactor assembly capacitor defective.	Replace reactor assembly.
	Defective 6021 (V3) tube.	Replace tube.
	Frequency amplifier carbon pile sticking or not adjusted.	Replace carbon pile.
	Intermittent DC supply (5896, V1 and V4 tubes and associated circuit).	Check out and replace as required.
FREQUENCY RANGE	Carbon pile out of adjustment or sticking.	Clean carbon pile tube. Readjust carbon pile.
	Carbon pile has broken or worn discs.	Replace carbon pile.

Figure 3-1. Analyzing Trouble (Continued)

3-6. For resistance readings, regulator must be disconnected from the motor-generator.

NOTE

All readings are +10 percent tolerance to the points charted in figure 3-4.

3-7. For voltage readings make up the lead connections to the terminal board of the PU-572/A as outlined in figure 3-2.

All readings are measured from chassis ground unless otherwise specified.

NOTE

Outside case is not at ground potential. The friction plates, located inside the cage assembly, are not insulators but exhibit a resistance value of approximately 15,000 ohms to infinity.

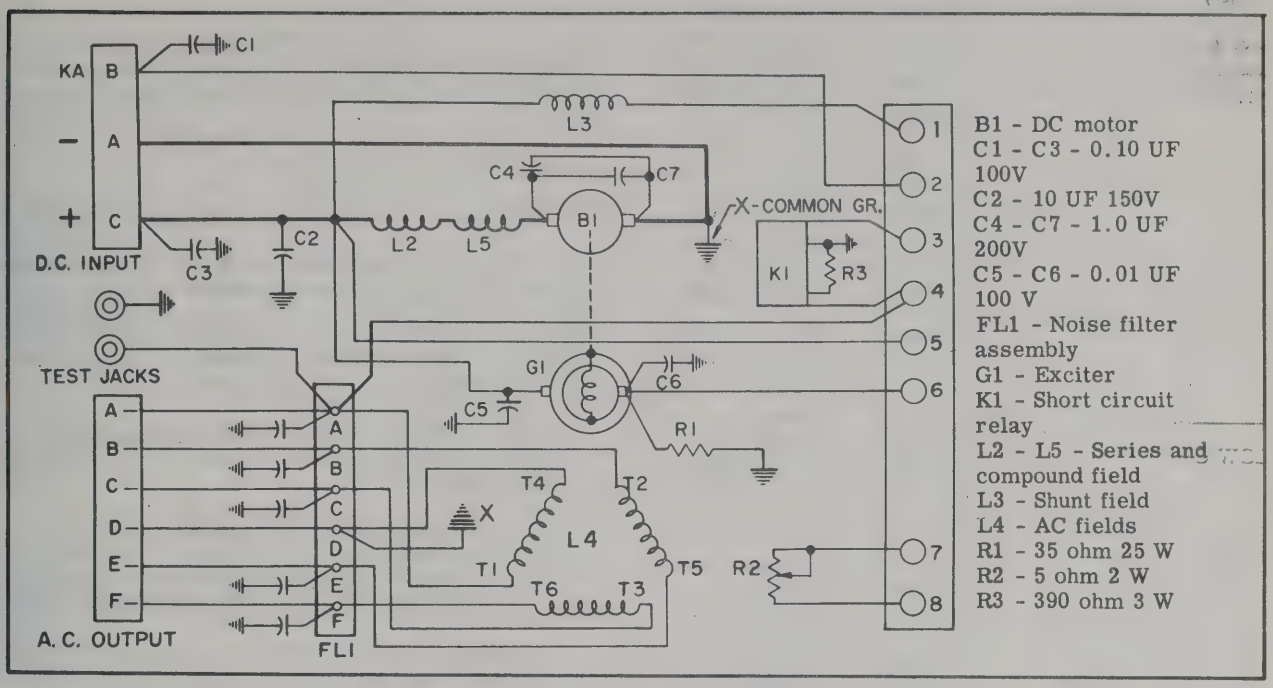


Figure 3-2. Unit Wiring Diagram

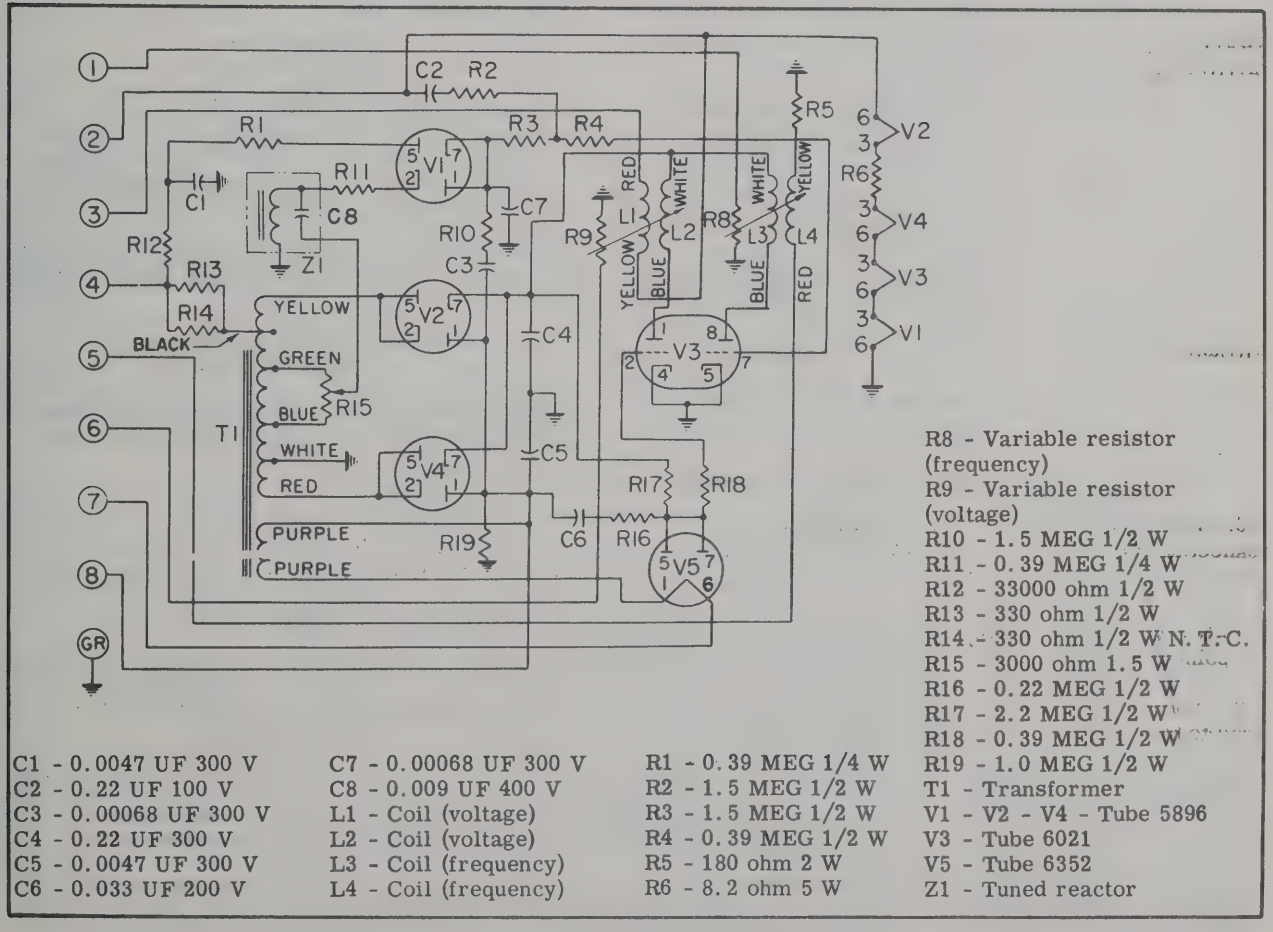


Figure 3-3. Wiring Diagram (Control Only)

Tube	Terminal	Voltage	Resistance
V1 (5896A)	1	-3 VDC	Infinite ohms
	2	33 VDC	390,000 ohms
	3	6.3 VDC	3 ohms
	4	NC	NC
	5	-37 VDC	400,000 ohms
	6	0 VDC	0 ohms
	7	-3 VDC	Infinite ohms
	8	NC	NC
V3 (6021A)	1	125-150 VDC	Infinite ohms
	2	-6 VDC	Infinite ohms
	3	13 VDC	6 ohms
	4	0	0 ohms
	5	0	0 ohms
	6	6.3 VDC	3 ohms
	7	-2 VDC	Infinite ohms
	8	120-140 VDC	Infinite ohms
V2 (5896A)	1	-180 VDC	Infinite ohms
	2	145 VAC	210 ohms
	3	21 VDC	17 ohms
	4	NC	NC
	5	145 VAC	210 ohms
	6	27.5 VDC	20 ohms
	7	180 VDC	Infinite ohms
	8	NC	NC
V5 (6352)	1	-180 VDC	Infinite ohms
	2	Not used	----------
	3	Not used	----------
	4	Not used	----------
	5	-5 VDC	Infinite ohms
	6	-180 VDC	Infinite ohms
	7	-5 VDC	Infinite ohms
	8	Not used	----------
V4 (5896A)	1	-180 VDC	1 Megohm
	2	135 VAC	600 ohms
	3	19 VDC	9 ohms
	4	NC	NC
	5	135 VAC	600 ohms
	6	13 VDC	6 ohms
	7	180 VDC	Infinite ohms
	8	NC	NC

Figure 3-4. Voltage and Resistance Continuity

3-8.

Follow the procedures outlined in paragraph 7-6 when replacing components of the voltage and frequency control circuit board assembly.

3-9. MOTOR-GENERATOR.

3-10. ANALYZING TROUBLE.

3-11. Figure 3-5 indicates the most common defects to look for in the motor-generator.

3-12. The manufacturer recommends that the motor-generator be performance checked with the use of voltage and frequency control of known ability.

a. If no qualified voltage and frequency control is available, it will be necessary to provide the following arrangement.

b. Connect a rheostat with a capacity of 50 watts, 100 ohms in series with a 0.5 amp DC ammeter between terminal "6" of the internal terminal board and ground. This rheostat will control generated voltage.

c. Connect a rheostat with a capacity of 50 watts, 100 ohms, in series with a 0-5 AMP DC ammeter between terminal "1" of the internal terminal board and ground. This rheostat will control the motor speed through the shunt field.

CAUTION

The shunt field must be connected prior to energizing the armature to prevent the machine from running overspeed. Machine overspeed can result in mechanical damage.

d. Refer to paragraph 2-7 and make the input leads as indicated. Provide a power supply of 27.5 volts DC.

CAUTION

Before starting the motor-generator the shunt field rheostat must be set at minimum value.

Trouble	Probable Cause	Remedy
MACHINE WILL NOT COME UP TO SPEED	Defective tubes.	Check tubes and replace. (Para 7-6)
MACHINE RUNS OVERSPEED	Carbon pile out of adjustment or sticking.	Adjust carbon pile. Clean carbon pile tube. (Para 9-9)
	Defective tube.	Check tubes.
ARMATURE WILL NOT ROTATE. NO CURRENT	DC brushes missing.	Replace brushes. (Para 4-8)
	No voltage at terminals.	Check power supply.
ARMATURE WILL NOT ROTATE AND MACHINE DRAWS EXCESSIVE CURRENT	Bearing failure.	Replace bearings as required.
	Motor shunt field open.	Replace stator. (Para 4-8)

Figure 3-5. Analyzing Trouble, Motor-Generator

Trouble	Probable Cause	Remedy
ARMATURE WILL NOT ROTATE AND MACHINE DRAWS EXCESSIVE CURRENT (Cont'd)	Bent or binding armature.	Replace armature. (Para 4-8)
MACHINE DRAWS EXCESSIVE CURRENT WHILE RUNNING	Motor armature grounded.	Replace armature. (Para 4-8)
MOTOR BRUSHES SPARKING OR ARCING	Brushes worn or broken.	Replace brushes. (Para 4-8)
	Motor armature grounded.	Replace armature. (Para 4-8)
	Brushes sticking in holders.	Free brushes and clean holders. (Para 4-8)
	Raised bar on commutator.	Turn down commutator or replace armature as necessary.
	Brushes not seated.	Run-in brushes. (Para 9-4.1)
ALTERNATOR BRUSHES ARCING	Brushes worn or broken.	Replace brushes, turn slip rings if necessary. (Para 9-3)
	Alternator field grounded.	Replace stator. (Para 4-8)
	Brushes sticking in holders.	Free brushes and clean holders. (Fig. 6-1)
	Slip rings out of round.	Turn down slip rings and check concentricity. (Para 7-5)

Figure 3-5. Analyzing Trouble, Motor-Generator (Continued)

3-13. PERFORMANCE CHECK.

a. Connect the inverter to Test Set, Motor-Generator AN/GSM-65 or to load bank and load meters in accordance with figure 2-1 if an AN/GSM-65 is not available.

b. Provide power to the motor-generator.

c. If the motor-generator is being checked with the aid of a voltage and frequency control, proceed to make the intermittent value checks by rotating the voltage and frequency rheostats. Compare the readings to those values given in figure 3-6.

d. If the motor-generator is being checked without the aid of voltage and frequency carbon pile amplifiers, manipulate the rheostats as installed in paragraph 3-12, and note values.

3-14. Motor-generators not meeting the above requirements must be overhauled.

Input Voltage	Output Voltage	Load Watts	Line Current	Shunt Field Current	Rotating Field Current
26	115	0	29 MAX	3.60 to 4.60	1.25 to 1.75
26	115	750 1 phase	72 MAX	1.30 to 2.10	2.00 to 2.65
28	115	0	27 MAX	3.80 to 4.80	1.25 to 1.75
28	115	750 1 phase	67 MAX	2.60 to 3.90	2.00 to 2.65
29	115	0	26 MAX	4.00 to 5.00	1.25 to 1.75
29	115	750 1 phase	65 MAX	3.00 to 4.10	2.00 to 2.65

Figure 3-6. Intermittent Values

SECTION IV

SECTION IV

DISMANTLING AND DISASSEMBLY

4-1. DISASSEMBLY.

4-2. The disassembly of this unit should be performed in accordance with the following instructions and in conjunction with the exploded view illustrations, figures 4-1 through 4-6.

4-3. DISASSEMBLY OF COMPONENTS. (See figure 4-1.)

a. Remove the screws (1) and washers (2). Disengage the stud fasteners (3) and lift off the lid assembly (7).

b. Remove the screws (9) and washers (10). Disconnect control leads. Lift out the voltage and frequency control assembly (8).

c. Looking at the connector end of the control box, remove the nut (19), and washer (23) from the right-hand side of the terminal block. Remove the leads connected at this point. Remove the nut (19), and washers (20 and 21) from the left side of the terminal block. Remove the leads attached at this point. Remove the ground stud (22), washers (20 and 21) and the lead connected to the stud (22).

d. Remove the control box base assembly (11) from the motor-generator (29) by taking out the screw (12) and washer (13), screws (14 and 15), washers (16 and 17) and the bracket (18). Lift the control box base assembly (11) off of the motor-generator (29).

e. Remove the AC end duct (24) from the control box base assembly (11).

4-4. VOLTAGE AND FREQUENCY CONTROL ASSEMBLY. (See figure 4-2.)

a. Remove both halves of the bottom retainer plate assembly (1).

b. Disengage the lead assembly from the bottom container and friction plate assembly (3) and remove the assembly from the voltage and frequency regulator assembly.

c. Remove the top shock frame assembly (5) by taking out two screws (6) at the top and four screws (7) from the side of the shock frame base assembly (15).

d. Remove the voltage carbon pile amplifier assembly (10) and the frequency carbon pile amplifier assembly (13) by taking out three screws (8) and three screws (11). Unsolder the leads from the two amplifier assemblies.

e. Disengage the lead assembly from the clip of the shock frame base assembly (15). Remove the circuit board assembly (20) by taking out the screws (16) and standoff posts (18).

4-5. CIRCUIT BOARD ASSEMBLY. (See figure 4-3.)

a. Unsolder the leads of the rheostat (3).

b. Remove the mounting bracket (4) by taking out the two screws (6 and 8). Unsolder the leads and remove the reactor assembly (5) and the transformer (7).

CAUTION

Remaining components of the circuit board assembly require special handling if replacement is indicated. Refer to paragraphs 7-6 and 9-14.

4-6. AMPLIFIER ASSEMBLY. (See figure 4-4.)

a. Remove the nuts (2) and slide the contact and plate assembly (1) from the radiator mounting studs (18).

b. Remove the radiator spacer (4).

c. Insert a rod, 1/8-inch diameter or less, into the carbon pile (5) and turn the unit upside down. The discs will slide out.

CAUTION

Discard the discs to prevent use at reassembly.

d. Remove the radiator (6) and press out the carbon pile tube (7) by spreading the radiator at the slot with a wedge.

e. Slide the rod and contact assembly (8) from the rear of the center plate (21).

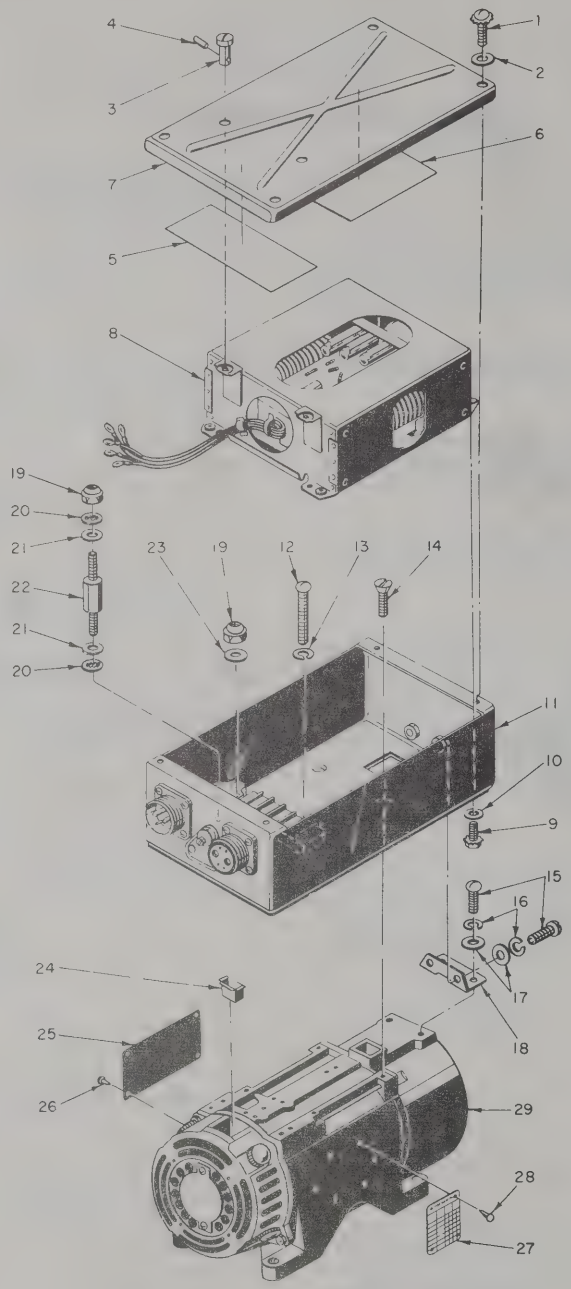
f. Snap the cover (9) off the plate and core assembly (23).

g. Remove adjusting screw (10) and sheet spring nut (11) from the center of the armature assembly (12).

h. Remove four screws (13) and washers (14) attaching armature assembly (12). At the top screws remove screw retainer (15) and spacers (16). At bottom screws, remove the fulcrum spring (17) and spacers (16).

i. Unscrew four radiator mounting studs (18), top studs (20) and bottom studs (19).

j. Separate the center plate (21), plate and core assembly (23) and remove the coil (22) from the plate and core assembly.



1. Screw
2. Washer
3. Stud fastener
4. Cross pin
5. Schematic less control diagram
6. Schematic wiring diagram
7. Control box lid
8. Voltage and frequency control assembly
9. Screw
10. Washer
11. Control box base assembly
12. Screw
13. Washer
14. Screw
15. Screw
16. Washer
17. Washer
18. Bracket
19. Nut
20. Washer
21. Washer
22. Ground stud
23. Washer
24. AC end duct
25. Inverter nameplate
26. Drive screw
27. Identification nameplate
28. Drive screw
29. Motor-generator

Figure 4-1. Inverter Assembly

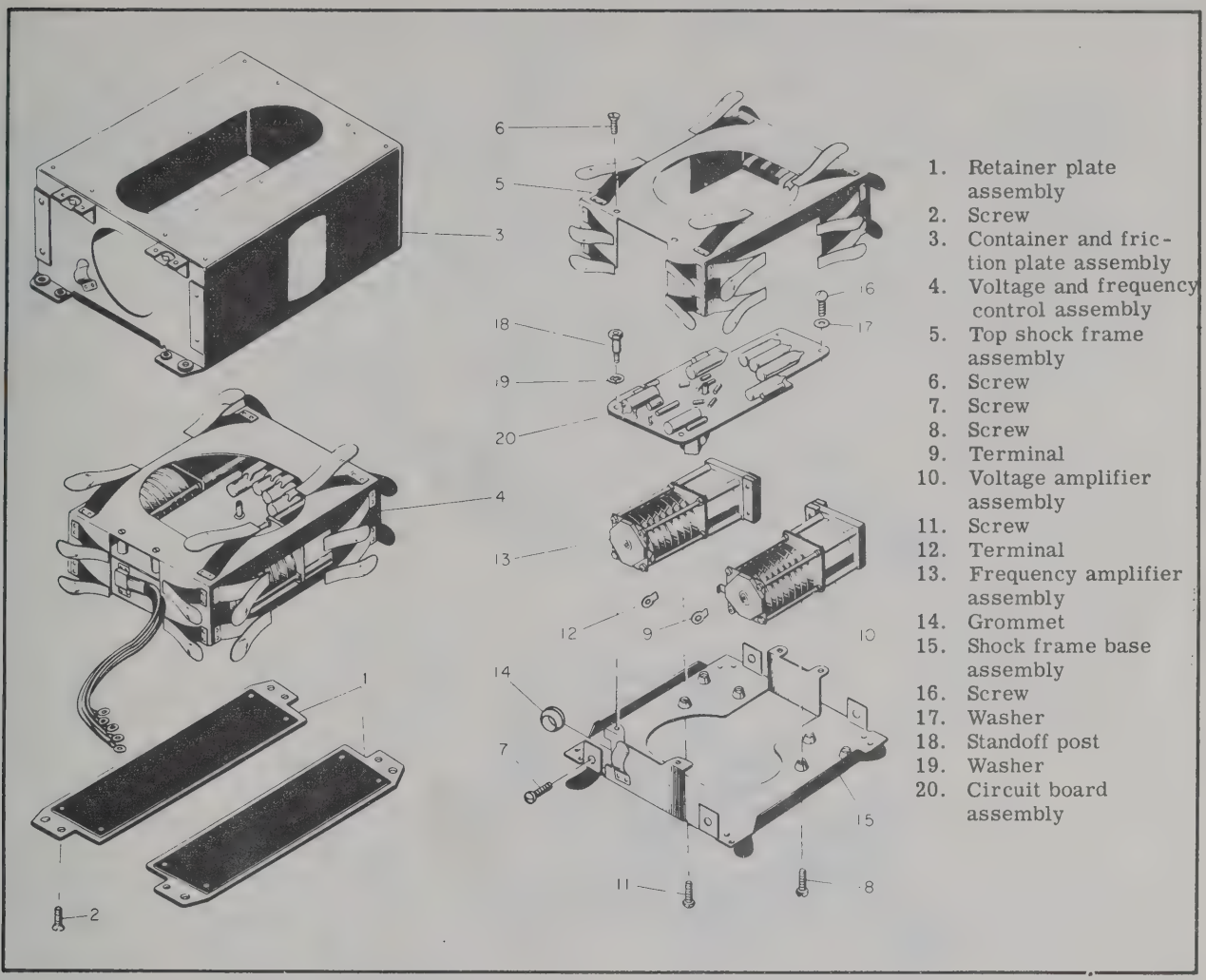


Figure 4-2. Voltage and Frequency Control Assembly

4-7. CONTROL BOX BASE ASSEMBLY. (See figure 4-5.)

a. Remove all leads attached to the terminal block (4) by removing the nut (1), washer (2) and strap (3). After removing the leads, place the nut and washer back on the terminal block to avoid their loss. Remove the terminal block (4) by removing the screw (5) and washers (6 and 7).

b. Make sure all leads are disconnected from the terminal board (8). Take out the screws (9), washers (10) and remove the terminal board (8) and designation plate (11).

c. Remove all leads connected to the radio noise filter (12). Remove the radio noise filter (12) from the control box base (61) by removing the screws (13) and washers (14).

d. Remove the cable clip (15) by removing the screw (16) and washers (17 and 18).

e. Remove the screw (19) from the side of the control box base (61). Remove the screw (20) and washers (21 and 22) to remove the undervoltage relay (24). Unsolder the resistor (23) from the undervoltage relay (24).

f. Remove the screws (25 and 26) and washers (27) to remove the output connector (28). The removal of the screws (26) also releases the bracket (29). Take the clamp (30) off of the bracket (29) by removing the screw (31) and washers (32 and 33).

g. Remove the double clamp (34) by removing the screw (35). Unsolder and remove the capacitors (36) from the connector (55). Remove the bracket-cap assembly (37) by taking out the screws (41 and 44), washers (39, 42, 45, and 46), and the spacers (40).

h. Remove the cable clips (43) by removing the screws (44), washers (45 and 46) and the nuts (47).

i. Remove the clamp (48) by taking out the screws (49 and 50), and the washers (51 and 52).

j. Remove the connector (55) by removing the screws

1. Terminal
2. Terminal
3. Wire wound variable resistor
4. Bracket
5. Reactor
6. Screw
7. Transformer
8. Screw
9. Fixed capacitor
10. Electron tube
11. Electron tube
12. Electronic tube
13. Fixed capacitor
14. Fixed resistor
15. Fixed resistor
16. Fixed resistor
17. Fixed resistor
18. Fixed resistor
19. Fixed resistor
20. Capacitor
21. Fixed capacitor
22. Fixed resistor
23. Capacitor
24. Fixed resistor
25. Fixed resistor
26. Fixed resistor
27. Fixed resistor
28. Panel

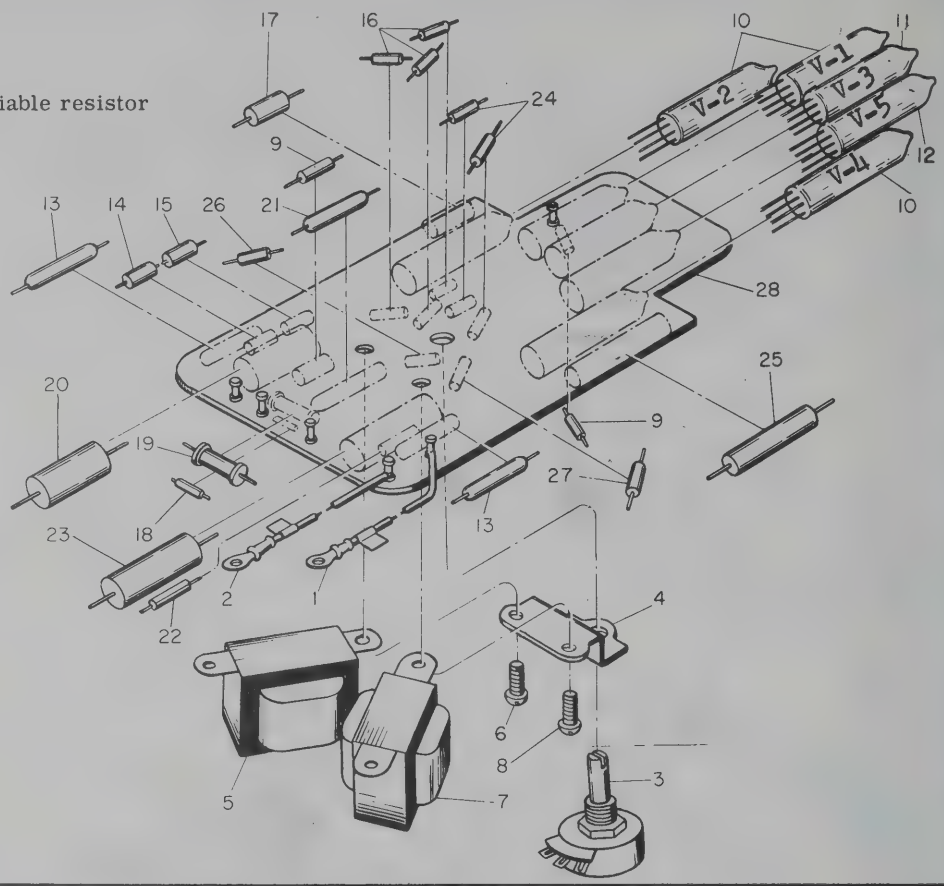


Figure 4-3. Circuit Board Assembly

1. Contact and plate assembly
2. Nut
3. Washer
4. Radiator spacer
5. Carbon pile
6. Radiator
7. Carbon pile tube
8. Rod and contact assembly
9. Cover
10. Set screw
11. Sheet spring nut
12. Armature assembly
13. Special head screw
14. Flat washer
15. Screw retainer
16. Spacer
17. Fulcrum spring
18. Radiator mounting stud
19. Lower stud
20. Upper stud
21. Center plate
22. Coil
23. Plate and core assembly

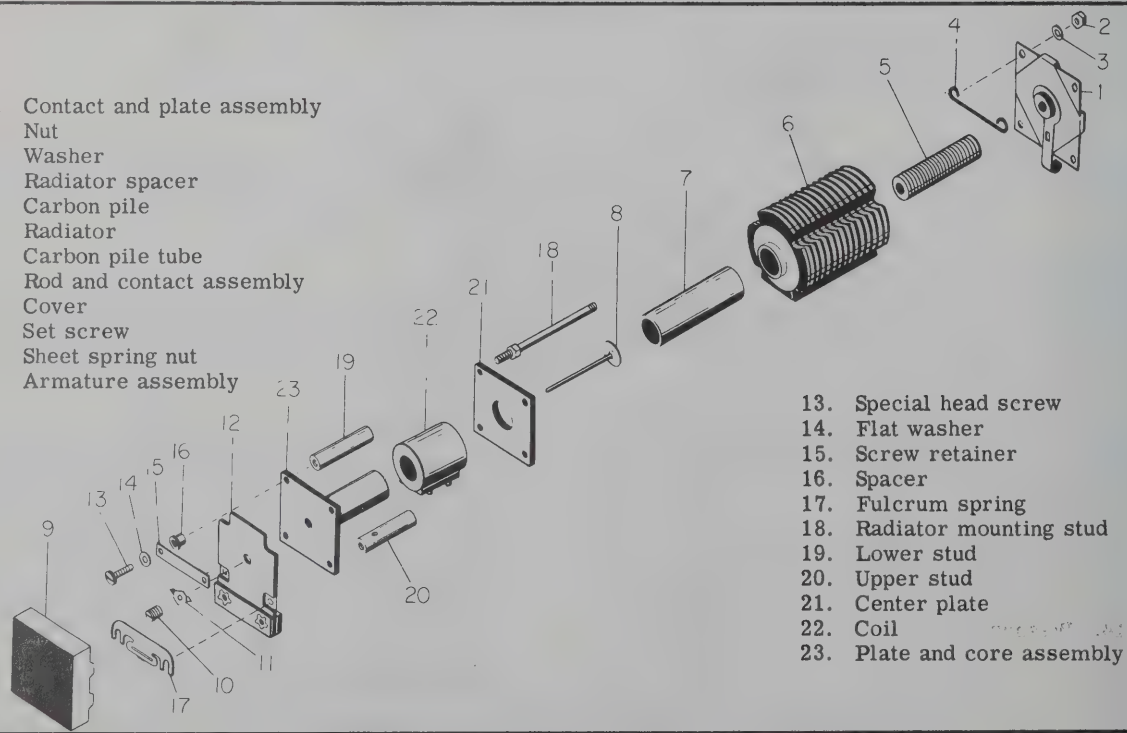


Figure 4-4. Amplifier Assembly

(53) and the washers (54). Unsolder and remove the capacitor (56) from the connector assembly.

k. Unsolder the leads from the rheostat (57). Remove the attaching nut from the rheostat and take the rheostat out of the control box base. Replace the attaching nut on the rheostat to avoid its loss.

l. Remove the attaching nuts of the red and black connectors (58 and 59), located inside the control box base (61). Pull the connector and lead assemblies out of the control box base. The voltage adjusting plate (60) is also freed when the connectors are removed.

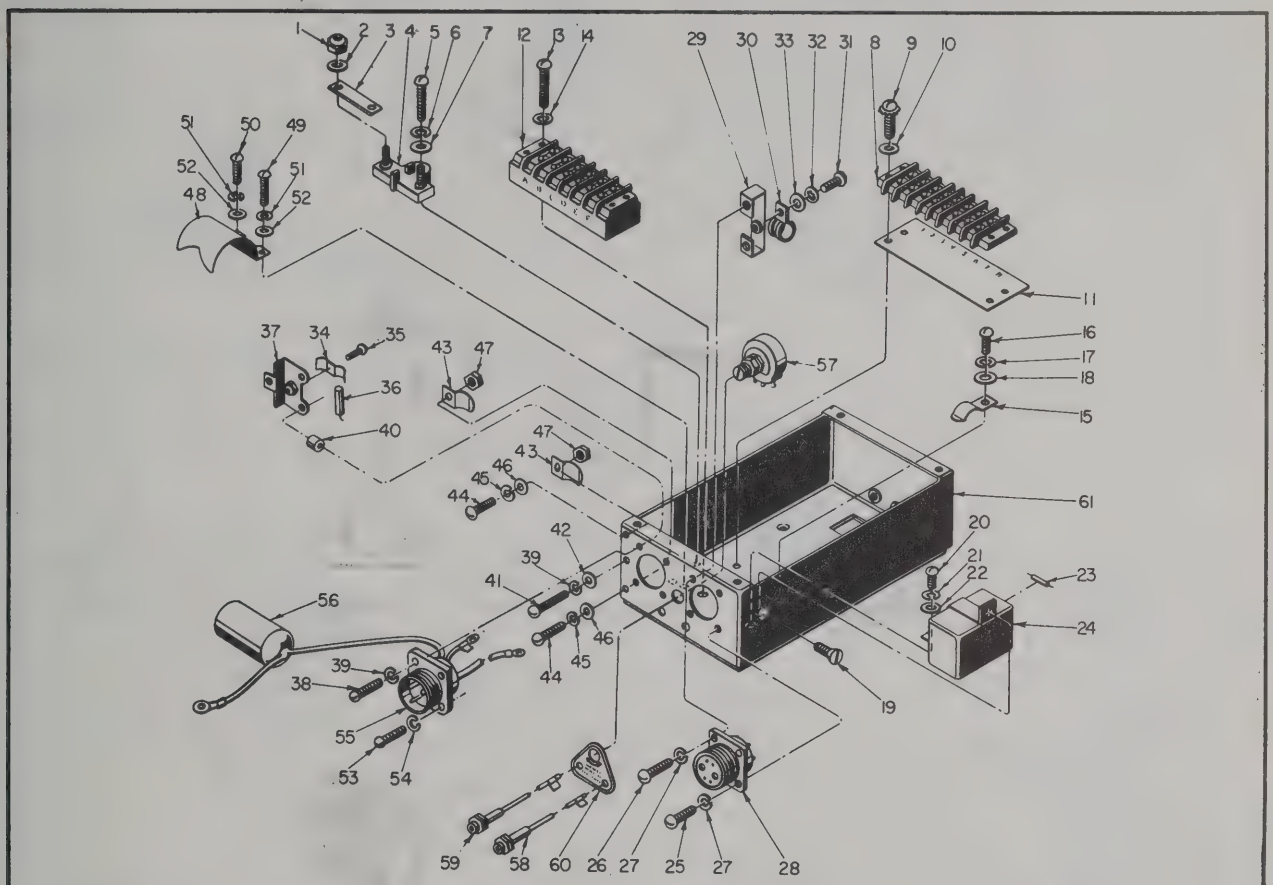
4-8. MOTOR-GENERATOR. (See figure 4-6.)

a. Free hardware and remove fan cover (1).

b. Remove four screws (5), lift up on brush springs and remove the DC brushes (4) from their brush holders.

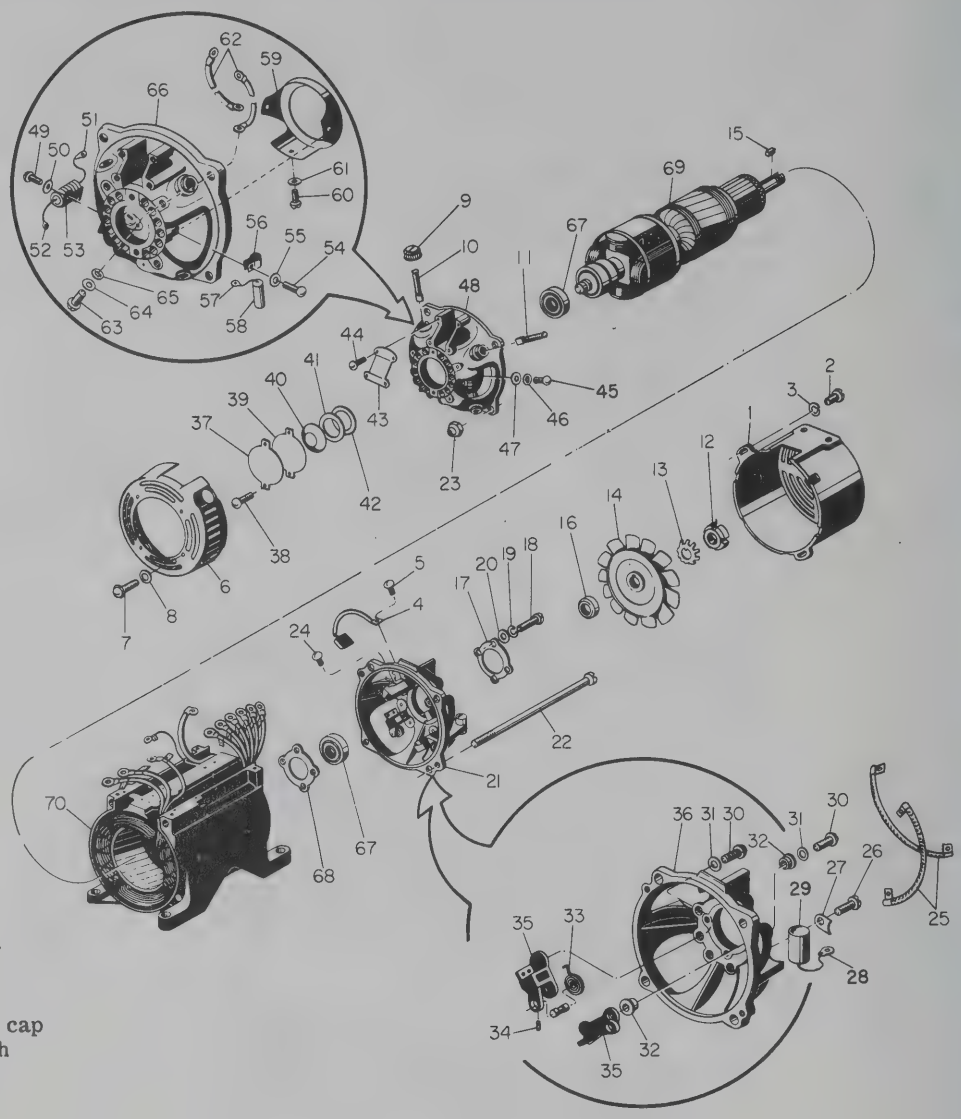
c. Free hardware and remove the AC end cover (6).

d. Remove four brush holder caps (9) and remove the AC brush assemblies (10 and 11).



1. Nut	17. Washer	32. Washer	47. Nut
2. Washer	18. Washer	33. Washer	48. Clamp
3. Strap	19. Screw	34. Double clamp	49. Screw
4. Terminal block	20. Screw	35. Screw	50. Screw
5. Screw	21. Washer	36. Capacitor	51. Washer
6. Washer	22. Washer	37. Bracket-cap.	52. Washer
7. Washer	23. Resistor	assembly	53. Screw
8. Terminal board	24. Undervoltage	38. Screw	54. Washer
9. Screw	relay	39. Washer	55. Connector
10. Washer	25. Screw	40. Spacer	56. Capacitor
11. Designation plate	26. Screw	41. Screw	57. Rheostat
12. Radio noise filter	27. Washer	42. Washer	58. Red connector
13. Screw	28. Output connector	43. Cable clip	59. Black connector
14. Washer	29. Bracket	44. Screw	60. Voltage adjus-
15. Cable clip	30. Clamp	45. Washer	ting plate
16. Screw	31. Screw	46. Washer	61. Control box base

Figure 4-5. Control Box Assembly



1. Fan cover
2. Screw
3. Washer
4. DC brush
5. Screw
6. AC end cover
7. Screw
8. Washer
9. Brush holder cap
10. Straight brush assembly
11. Angle brush assembly
12. Self locking hex nut
13. External tooth lock washer
14. Electrical rotating equipment fan
15. Machine key
16. Fan spacer
17. External bearing plate
18. Screw
19. Washer
20. Washer
21. DC shield
22. Thru bolt screw
23. Nut
24. Screw
25. Lead assembly
26. Screw
27. Capacitor clip
28. Terminal
29. Capacitor
30. Screw
31. Washer
32. Bushing
33. Brush spring
34. Screw
35. Brush holder
36. DC end bell
37. Bearing plate
38. Screw
39. Shim washer
40. Loading spring
41. Shim washer
42. Shim washer
43. Cover plate
44. Screw
45. Screw
46. Washer
47. Washer
48. AC end shield assembly
49. Screw
50. Washer
51. Terminal
52. Terminal
53. Resistor
54. Screw
55. Washer
56. Capacitor clamp
57. Terminal
58. Capacitor
59. Air duct
60. Screw
61. Washer
62. Lead Assembly
63. Screw
64. Washer
65. Washer
66. AC end shield assembly
67. Ball bearing
68. Internal bearing plate
69. Armature
70. Stator

Figure 4-6. Motor-Generator

e. Remove the lock nut (12), lock washer (13), fan (14), machine key (15) and fan spacer (16) from DC end of armature shaft.

f. Remove four screws (18). Remove the external bearing plate (17).

g. Remove four thru bolt screws (22) and nuts (23) from opposite ends of the stator. Free the stator leads from the DC shield assembly (21) and remove shield assembly from the stator. Tap the shield several times with a nonmetallic mallet to facilitate removal. Remove an internal bearing plate (68) from the inside of the DC shield assembly.

h. A lead assembly (25), two capacitor assemblies and four brush holders may be removed from the DC end bell (36). Two springs (33) are removed from each brush spring pin.

i. Remove bearing plate (37), shim washer (39), loading spring (40) and shim washers (41 and 42) from the AC end shield assembly (48).

j. Remove the cover plate (43) from the AC end shield assembly (48). Remove four screws (44) to free the stator leads from the AC end shield.

k. Remove the AC end shield assembly (48) from the stator (70). Tap the end shield several times with a fiber mallet to facilitate removal.

l. Remove the AC end shield assembly (66), a resistor assembly (53), two capacitor assemblies (58) an air duct (59) and two lead assemblies (62).

m. Remove the armature (69) from the DC end of the stator (70). Press ball bearings (67) from the shaft of armature (69).

CAUTION

Do not disassemble the armature assembly (69) or stator assembly (70) beyond the point indicated in the exploded view. Handle the armature carefully. Provide suitable protection for commutator, slip rings and bearing journal surfaces.

SECTION V

CLEANING

5-1. GENERAL.

Warning: Prolonged breathing of Cleaning Compound is dangerous; make certain that adequate ventilation is provided. Cleaning compound is flammable; do not use near a flame. Avoid contact with the skin; wash off any that spills on your hands.

a. Wash all plastic and metal parts in Cleaning Compound FSN 7930-395-9542, and blow dry with compressed air.

b. Remove all dirt, dust, grease, carbon dust and other foreign matter. Make certain all electrical connections are clean and shiny to insure good electrical conductivity.

5-2. ARMATURE ASSEMBLY AND STATOR

5-3. Wipe these assemblies with a clean cloth, dampened (not wet) with Cleaning Compound, and clean thoroughly with a brush. After cleaning, dry out the armature and stator assemblies by baking for 2 to 4 hours at 93° C (200° F).

CAUTION

Do not soak the assemblies in the Cleaning Compound.

5-4. CARBON PILE TUBE.

5-5. Use isopropyl alcohol (2-**propanol** or **isopropanol** 98 percent pure ASTMD 770-46) to clean inside diameter of carbon pile tube. Clean with 1/2-inch diameter soft bristle brush. Permit tube to air-dry. Do not use compressed air.

CAUTION

Alcohol is highly inflammable. Use extreme care when handling.

5-6. SURFACE TREATMENT.

5-7. Touch up any scratches, after cleaning, with blue enamel, color NO. 501, Military Specification NO. MIL-E-7729. Refer to the applicable painting and refinishing practices in TB SIG 364.

CAUTION

Do not pain over nameplates or other identification markings. Never apply paint to parts previously unpainted.

SECTION VI

INSPECTION OF DISASSEMBLED EQUIPMENT

6-1. GENERAL

a. Carefully inspect all plastic and metal parts for wear or damage. Replace any defective part.

b. Inspect all wiring, sleeving and junctions. Examine for frayed or burned insulation. Replace damaged wiring in accordance with the wiring diagrams, figures 3-2 and 3-3.

6-2. INSPECTION PROCEDURES. Refer to figure 6-1 for inspection procedures.

Nomenclature	Figure & Index NO.	Procedure
MOTOR-GENERATOR COMPONENTS		
Stator assembly	fig. 4-6, index NO. 70	DC STATOR. Using a high potential tester, apply 220 volts at a commercial frequency between the machined dowel and one of the two shunt leads (marked 1 and DC+). Since series and shunt leads are tied together in the DC+ terminal, this procedure will check all coils to ground. No coil to coil short test can be made because of the above mentioned connection. **WARNING** Precautions should be taken to avoid accidental contact with conductors carrying high voltage. The resistance of the shunt winding (light) should be 3.0 ±10 percent ohms as measured between Leads 1 and DC+. AC STATOR. Apply 500 volts at a commercial frequency between the machine dowel and each stator lead, A, B or C successively. The resistance of the AC stator winding should be 1.35 ±10 percent ohms per phase-measured A-D, B-E or C-F.
Armature assembly	fig. 4-6, Index NO. 69	Make a careful inspection of the armature to detect wear and any obvious damage. The armature measurements must conform to those given in (para 7-5). Using a high potential tester, apply 220 volts at commercial frequency between any of the commutator bars and the armature shaft. When touching a bar, stay outside the brush path to avoid pitting the brush track. Also apply 220 volts between the armature shaft and each of the two collector rings. Always touch the test prod to the sides of the collector rings in order that the brush tracks may not be damaged. **WARNING** Take precautions to avoid accidental contact with conductors carrying high voltage.

Figure 6-1. Inspection

Nomenclature	Figure & Index NO.	Procedure
Armature assembly (Cont'd.)	fig. 4-6, index NO. 69	Check the resistance between the collector rings. It should be 3.60 ±10 percent ohms. Check commutator bars for alignment and tightness. If any high bars are found, replace the complete armature assembly. If bars are badly burned, replace the armature as this is an indication of open-circuited armature coils. Balancing. Dynamic unbalance will be detected by rough or noisy rotation. Normally an armature assembly will not lose its balance unless it has been bent or severely damaged If the armature does require rebalancing, use a dynamic balancing machine and use additive balancing on commutator balance plate and on AC exciter slot wedges. If the commutator contact surface is rough or in such condition that it cannot be restored by cleaning, the commutator should be turned down as follows: Mount the armature assembly in a lathe between centers. Check the concentricity of the armature by placing a dial indicator against the journal and turning the armature by hand. With a sharp lathe tool (diamond cutting tool), take a light cut not too exceed 0.00005 inch across the commutator surface. Take a second cut, if necessary, to remove rough spots or grooves. Remove all copper burrs. Undercut mica between bars; use a 1/2-inch diameter "V" slot cutter to produce a "V" of approximately 50° included angle. Cut to a depth so that approximately 0.025 inch of bare copper is exposed from surface of commutator to mica. 1-1/16-inch from outward edge of commutator toward commutator riser should be full depth of undercut. Make certain that no mica clings to sides of slot. Polish the commutator with NO. 0000 sandpaper, being careful not to scratch the surface. Do not use emery or carborundum cloth. Chamfer the edges of each bar with very fine sandpaper on a straight edge or fine stone. Make certain the commutator is absolutely smooth after this operation. Blow out all dust when finished, recheck the concentricity. It must be within 0.001 inch, total indicator reading. Polish the collector rings with NO. 0000 sandpaper. If the contact surface is rough, scored or in such condition that it cannot be restored by cleaning, turn the collector rings down in the same manner as the commutator bars. Clean and bake the armature assembly in accordance with paragraph 5-2. Repeat the foregoing electrical checks.
AC shield assembly	fig. 4-6, index NO. 48	Check brush holders. They must be clean. Brushes must slide freely in holders. The bearing housing must be smooth and free of scoring marks.
DC end bell	fig. 4-6 index NO. 36	Inspect bearing housing. It must be smooth and free of scoring marks.
Brush holders	fig. 4-6, index NO. 35	Brushes must slide freely in brush boxes. Spring (33) tension should be 20 ±10 percent ounces at a position 30 degrees above the new brush position.
DC brushes	fig. 4-6, index NO. 4	Replace motor brushes when worn down to less than 9/16 inch (or reference wear groove).
AC brushes	fig. 4-6, index NOS. 10 and 11	Replace exciter brushes when worn down to less than 7/16 inch (or reference wear groove).

Figure 6-1. Inspection (Continued)

Nomenclature	Figure & Index NO.	Procedure
AMPLIFIER ASSEMBLIES		
Rod and contact assembly	fig. 4-4, index NO. 8	Rod must be straight and contact perpendicular to rod.
Fulcrum springs	fig. 4-4, index NO. 17	Fulcrum spring must not be deformed. Compare with spring of correct contour.
Coil (voltage)	fig. 4-4, index NO. 22	Coil resistance should be 11,300 ohms ±10 percent between the white and blue terminals; 380 ohms ±5 percent between the red and yellow terminals. Assemble coil to core. Test for grounded windings or shorted coils by touching prods of a high resistance ohmmeter to coil terminals and core and between white and red terminals. If reading is less than 500,000 ohms, replace coil assembly. See terminal marking code.
Coil (frequency)	fig. 4-4, index NO. 22	Coil resistance should be 11,500 ohms ±10 percent between white and blue terminals; 115 ohms ±10 percent between red and yellow terminals. Assemble coil to core. Test for grounded windings or shorted coils by touching prods of high resistance ohmmeter to coil terminals and core between white and red terminals. If reading is less than 500,000 ohms, replace coil assembly. See terminal marking code. Terminal Marking Code Code Letter — Lead Color W — White P — Blue R — Red Y — Yellow
Set screw	fig. 4-4, index NO. 10	Check fit. If screw binds, run soft lead pencil over threads.
Armature assembly	fig. 4-4, index NO. 12	Must be absolutely flat.
CONTROL BOX BASE ASSEMBLY		
Terminal Boards	fig. 4-5, index NO. 8	Visually inspect for cracked or broken terminal barriers.
Capacitors	All	Check for grounded or shorted capacitor.
Undervoltage relay	fig. 4-5, index NO. 24	Visually inspect for damaged terminals and other signs of physical damage. Pull-in voltage of the relay (24) should be 50 volts AC, +10, -5 volts, 400 CPS; drop-out voltage should be 35 volts AC, +3, -5 volts, 400 CPS.
Rheostat	fig. 4-5, index NO. 57	Inspect rheostat for physical damage, burns or excessive wear. The rheostat resistance should be 5 ohms, ±10 percent.
Resistors	All	Visually inspect for burned or cracked resistors. Check for damage or leakage.

Figure 6-1. Inspection (Continued)

Nomenclature	Figure & Index NO.	Procedure
VOLTAGE AND FREQUENCY CONTROL ASSEMBLY		
Transformer	fig. 4-3, index NO. 7	Inspect for damage. Check per following procedure: 1. Apply 115 VAC (±1/2 V), 400 CPS **across** primary (Black-White) leads. 2. Output voltages should read: White - Red 151 ±3 V White - Blue 39 ±2 V White - Green 83 ±3 V White - Yellow 150 ±3 V Purple - Purple 4.5 ±0.3 V 3. Primary magnetizing current - 14 MA MAX.
Reactor assembly	fig. 4-3, index NO. 5	Inspect and check resistance, 1,650 ohms ±10 percent.
Variable resistor	fig. 4-3, index NO. 3	Inspect rheostat for physical damage, cracks, burns, or excessive wear. The resistance should be 3,000 ohms ±10 percent.
Electron tubes	fig. 4-3, index NOS. 10, 11, 12	Refer to the wiring diagram, figure 3-3. Location of tubes are as follows: Looking at the tube side of the circuit board assembly, with the tubes at the top position, the tubes reading from left to right are identified as V2, V1, V3, V5 and V4. NOTE Tube checking can only be done while control assembly is connected to either an inverter or in the manner listed below. Apply 28 volts DC to terminal "2" and terminal "GR" of the regulator assembly. Observe the tube filaments. Tubes V1, V2, V4 and V3 should light up. Any open filament will prevent all of the tubes from lighting. To determine a defective tube, check each tube V1, V2, V4 and V3 with an ohmmeter across pins 3 and 6. Replace any defective tubes in accordance with paragraph 7-6. Apply 115 volts, 400 cycle AC to terminal "4" and 28 volts DC to terminal "2", grounding terminal "GR", short terminals "7" and "8" with a 5 ohm, 5 watt resistor. Tube V5 should also light. If tube V5 flickers or does not light, replace it in accordance with paragraph 7-6. Also check pins NO. 7 of tubes V2 and V4. They should indicate a reading of +185 to 200 volts. Check pins NO. 1 of tubes V2 and V4. They should indicate a reading of -185 to 200 volts.

Figure 6-1. Inspection (Continued)

SECTION VII

REPAIR AND REPLACEMENT

7-1. GENERAL.

7-2. Repair instructions are included for only those parts which can be economically repaired. Replace any part found to be defective under the conditions outlined in figure 6-1, unless specific repair procedures are outlined below.

7-3. REBALANCING ARMATURE.

7-4. Use a dynamic balancing machine and use additive balancing on the commutator end and subtractive balancing on the AC exciter end to accomplish the rebalancing of the armature.

7-5. TURNING DOWN COMMUTATOR CONTACT SURFACES.

a. If the commutator contact surface is rough or in such condition that it cannot be restored by cleaning, the commutator should be turned down as follows: Mount the armature assembly in a lathe between centers. Check the concentricity of the armature by placing a dial indicator against the journal and turning the armature by hand. With a sharp lathe tool (diamond cutting tool) take a light cut not to exceed 0.005 inch across the commutator surface. Take a second cut, if necessary, to remove rough spots or grooves. Remove all copper burrs.

b. Undercut mica between bars; use a 1/2 inch diameter "V" slot cutter to produce a "V" of approximately 50° included angle. Cut to a depth so that approximately 0.025 inch of bare copper is exposed from surface of commutator to mica. 1-1/16 inch from outward edge of commutator toward commutator riser should be full depth of undercut. Make certain that no mica clings to sides of slot. Polish the commutator with NO. 0000 sandpaper, being careful not to scratch the surface. Do not use emery or carborundum cloth. Chamfer the edges of each bar with very fine sandpaper, or a straight edge of fine stone. Make certain the commutator is absolutely smooth after this operation. Blow out all dust when finished. Recheck the concentricity. It must be within 0:001 inch, total indicator reading.

c. Polish the collector rings with NO. 0000 sandpaper. If the contact surface is rough, scored or in such condition that it cannot be restored by cleaning, turn the collector rings down in the same manner as the commutator bars.

d. Clean and bake the armature assembly in accordance with paragraph 5-2. Repeat the foregoing electrical checks.

7-6. CIRCUIT BOARD REPAIR. (See figure 4-3.)

a. Replace any tubes and/or components removed in accordance with the following:

CAUTION

Electron tubes used in this inverter are matched sets. If any tube is defective, all tubes must be replaced by a new set.

b. Solder joints shall be neat and smooth, without pinholes, peaks or sharp protrusions. The solder surface shall be bright, glossy and flux-free. Use materials only as specified below, or, approved equivalents. Do not use excessive amounts of solder. Do not use touch-up enamel on internal mechanism and external slide-mating surfaces of moving parts.

c. The following materials are to be used: Flux cored solder or 0.043 inch diameter solid solder. (Non-corrosive type liquid flux must be used with the solid solder); isopropyl alcohol; clear insulating touch-up enamel; solvent (for touch-up enamel).

d. After locating defective components, carefully remove the part(s) without disturbing the adjacent component(s) or their protective coatings. When defective component(s) incorporate(s) common solder junctions with other components, do not disturb the common joints unless the terminal leads of the defective part cannot be used as splice stubs for the replacement part. Upon removal of desired parts, the following steps shall be taken in exact sequence:

e. Thoroughly clean all disturbed terminations by abrading or scraping the protective coating from the intended connection surfaces.

f. Wipe the terminal surfaces with clean cloth dampened with alcohol.

g. Insert replacement part in identical location and disposition as previous part, or in a specified new location. Resultant lead lengths and required insulation should closely approximate the amounts and types used on the original installation.

h. Complete splices by mechanical methods (hook, twist, insertion, etc.) and replace any component supports. Solder junctions using materials specified. Use conductive transfer heating methods, only, in the replacement of parts, i.e. soldering irons, guns, pencils, etc. Do not apply direct flame to any components.

i. Wash flux residues from solder joints with alcohol and recoat all disturbed components and junctions with

insulating enamel by brush application of a mixture of three parts enamel to two parts solvent.

CAUTION

The maximum temperature resistance of the majority of the components involved range to 250° F (121° C). Exercise care that soldering operations at terminations do not result in excessive thermal transfer through leads or supporting members.

j. Dry the touch-up enamel as follows: Between coats; dry two hours or bake 1/2 hour at 190° F (88° C). Final coat; air dry four hours or bake one hour at 190° F (88° C).

NOTE

This treatment should result in the application of a continuous smooth, encompassing film which has reblended into the original coating at all contact surfaces between the supporting plate and components. Successive applications may be required to obtain a satisfactory protective film of between two and three mils. Care must be exercised to exclude airborne dust, fumes or dirt from the area during the touch-up or drying periods. Brushes must be kept clean and pliable.

SECTION VIII

REASSEMBLY AND TESTING OF SUBASSEMBLIES AND ASSEMBLIES

8-1. This section is not applicable as information is covered in Section IX.

SECTION IX

REASSEMBLY AND TESTING OF COMPONENTS

9-1. ASSEMBLY OF COMPONENTS.

9-2. Reassemble parts previously removed for test or repair in accordance with the wiring diagrams, figures 3-2 and 3-3.

9-3. MOTOR-GENERATOR. (See figure 4-6.)

a. Assemble the resistor assembly to the AC end shield assembly (66). Slide a capacitor (58) into each of two capacitor clamps (56) and secure in the end shield with the screw (54) and washer (55). Refer to figure 9-1 and make up the terminal and lead connections as indicated. Assemble the air duct (59, figure 4-6) to the AC end shield assembly (66).

b. Make sure that the DC brush spring pins are centered in each of the brush holders (35). Slide two springs (33) on each pin. Do not tighten the setscrew (34) until spring pressure has been adjusted from 21-25 OZ at a new brush position. Seal setscrew with Glyptal Enamel.

NOTE

Make sure the internal bearing plate (68, figure 4-6) is in position at the DC end of the armature before assembling ball bearings.

c. Assemble four brush holder assemblies to the DC end bell (36). Two bushings (32) are used at each mounting hole of the two insulated brush holder assemblies as indicated in figure 9-2. Secure all capacitor assemblies to DC end bell (36, figure 4-6) with a capacitor clip (27) held in place with a screw (26). Refer to figure 3-2 for proper location of capacitor terminals as well as wiring of the end bell.

d. Press new ball bearings (67, fig. 4-6) on both ends of the shaft of the armature assembly (69). Apply pressure to inner race of ball bearing until it is seated against the shoulder on both ends of the shaft.

e. Work the AC end shield assembly (48) over the shaft of the armature (69) and on to the stator (70). Tap the shield lightly with a fiber mallet to seat.

f. Install the armature assembly (69) in the stator (70) from the AC end. Work the DC end shield (21) in position over the bearing (67) and onto the stator (70). Tap the end shield with a fiber mallet to fully seat it. Position the external bearing plate (17) over the armature shaft (69) and fasten to the DC end shield (21) with the screws (18) and washers (19 and 20).

g. Install thru bolt screws (22) and nuts (23) at the AC end of the unit. Tighten the thru bolt screws 40 to 50 inch pounds at room temperature.

h. Place the loading spring (40) on the AC end of the armature shaft and measure the "A" distance as indicated in figure 9-3. Add 0.010 to 0.015 inch to the "A" reading to obtain the required shim thickness. Remove the loading spring (40, fig. 4-6) and add shim washers (41 and 42); replace loading spring. Position shim washer (39) and bearing plate (37) and fasten in place with two screws (38).

i. Check that the armature rotates freely when turned by hand.

j. Short-circuit test the armature assembly. Refer to paragraph 9-5.

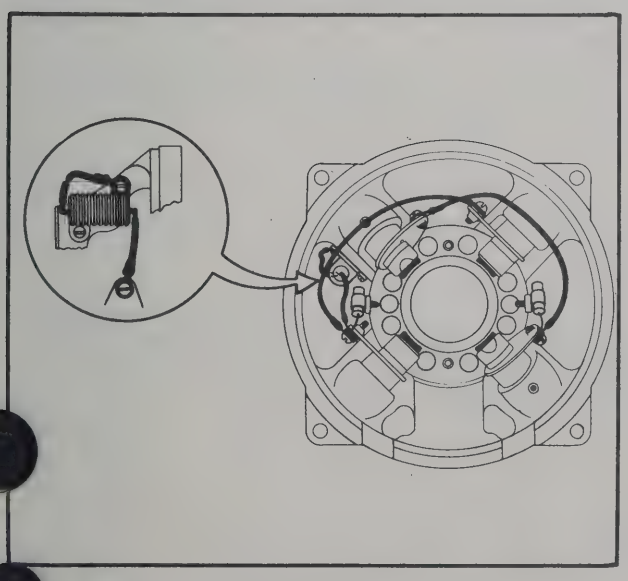


Figure 9-1. AC End Shield Assembly

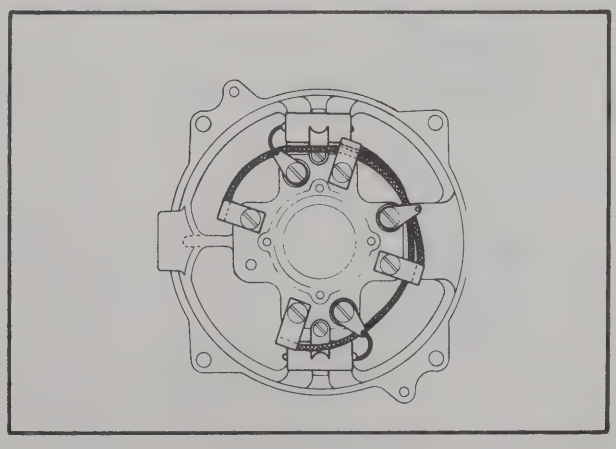


Figure 9-2. DC End Shield Assembly

k. Setting of neutral, if required, should be performed as outlined in paragraph 9-4.

l. Install DC brushes by lifting brush tension springs and installing four new DC brush assemblies (4, figure 4-6) in the brush holder assemblies. The face of the brushes must fit the contour of the commutator. Attach each set of brush leads to their respective brush holder with a screw (5).

m. Install two new straight AC brushes (10) and the angle brushes (11) in the AC end shield. Assemble a brush holder cap (9) at each brush holder. To the DC end of the armature shaft, assemble in order, a fan spacer (16), a machine key (15), fan (14), lock washer (13), and a lock nut (12).

9-4. SETTING BRUSH NEUTRAL. (See figures 9-4 and 9-5.)

NOTE

Neutral must only set when the armature, DC shield assembly, or the stator is changed. On the nameplate side of the motor-generator, there is a neutral setting index mark across the edge of DC end shield and stator, painted orange. For minor overhauls, it may not be necessary to reset neutral.

a. DC end shield position must be set with respect to armature and stator so as to locate brushes at electrical neutral. The procedure is as follows:

NOTE

Remove DC brushes for neutral setting.

b. Connect a DC millivoltmeter (0-50 millivolts) such as used to measure DC amperes in conjunction with an external shunt to a pair of insulated test probes. (See figure 9-4.)

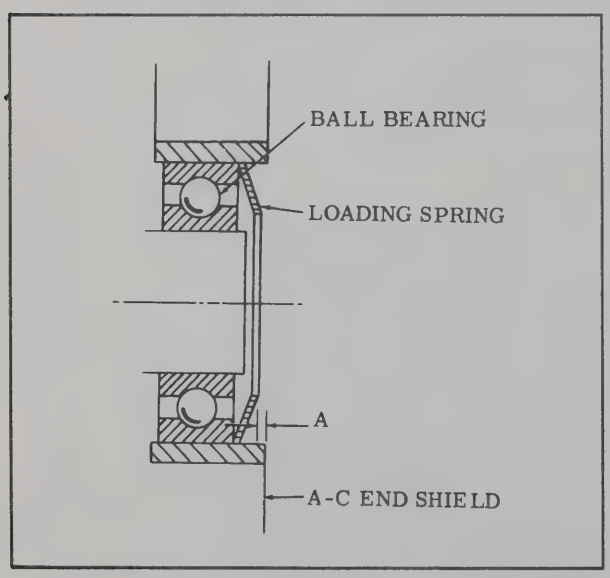


Figure 9-3. Measuring Load Spring Deflection

c. Rotate armature until center of a commutator bar lines up with center of a brush assembly holder slot as closely as possible. Check adjoining brush assembly holder; it should have a bar in its slot.

d. While holding the armature to prevent rotating, carefully hold test probes on central bars in adjoining brush holders while an assistant touches approximately 24 volts DC to open shunt field leads for just one second. The millivoltmeter pointer should suddenly deflect slightly and return. (See figure 9-5.)

e. Maintaining same polarities on meter and 24-volt connections throughout adjustment, loosen thru bolts and rotate DC end shield about 1/64-inch at a time and repeat steps c. and d. each time until meter shows no deflection when the voltage is applied to shunt field. Tighten thru bolts.

CAUTION

Dummy brushes should be used instead of test probes. This will insure more positive armature location. Dummy brushes should be constructed in accordance with figure 2-2.

f. Replace DC brushes in brush assembly holders of DC shield assembly.

NOTE

Make certain that brushes slide easily without binding and brush tension springs engage the brushes at center point between leads.

9-4.1. BRUSH RUN-IN.

a. If the AN/GSM-65 is not available, connect the inverter to a power source and load bank. Adjust DC input to 27.5 volts. **(Fig. 2-1)**

b. Set the voltage adjustment rheostat and frequency adjustment rheostat at midpoint. **(Fig. 1-2)**

c. Start the inverter. Allow approximately 10 seconds for tubes to warm up.

d. Set the voltage adjustment rheostat so inverter output is 115 volts. Set frequency adjustment rheostat so that inverter output is 400 CPS.

e. The face of each commutator brush must appear to contact its commutator 100 percent in the direction of rotation for at least 75 percent of the brush dimension parallel to the shaft. The face of each slip ring brush must appear to contact its slipring for at least 75 percent of the brush area. There must be no evidence of grooving or other surface damage to the face of the brush.

9-5. ARMATURE SHORT CIRCUIT TEST.

9-6. Apply 115 VAC across shunt field of the motor-generator and rotate the armature slowly by hand. When no short circuit is present, the armature will tend to lock in at the position of the short circuit. Replace a shorted armature.

9-7. AMPLIFIER ASSEMBLY. (See figure 4-4.)

a. Place a small amount of varnish, Schenectady ST 6, or equivalent, on the core and plate assembly (23). Allow the varnish to become tacky.

b. Install the coil assembly (22) on the core and plate assembly (23). On both amplifiers, the blue and white (P-W) terminals must be closest to the core and plate assembly (23). The terminals should be perpendicular to one side of the core and plate assembly.

c. Install center plate (21) on core and plate assembly. Make certain center plate fits square and the mounting holes align with the holes in plate and core assembly. The finished side of the center plate must be outward.

d. Place assembled unit on a flat surface with the plate of the plate and core assembly forward. Leads must be positioned as shown in figure 9-6 for the voltage amplifier and figure 9-7 for the frequency amplifier.

e. Install the studs (19 and 20, figure 4-4) as shown in figures 9-6 and 9-7.

f. Install four radiator mounting studs (18, figure 4-4).

g. Position armature assembly (12) on plate and core assembly (23) so that counterweight end is positioned as shown in figure 9-6 for voltage amplifier and figure 9-7 for frequency amplifier. Attach with two collar spacers (fig. 4-4), fulcrum spring (17) and two screws (13) at counterweight end.

h. Stand assembly up so that it rests on armature assembly. Install rod and contact assembly (8) in opening in center of core and plate assembly (23).

i. Install the carbon pile tube (7) in the radiator (6) and position the carbon pile tube on the center plate (21) so that it is supported by the end of the core of the plate and core assembly (23). Place the radiator spacer (4) on the two top studs (18) protruding beyond the radiator (6) so that straight side of radiator spacer (4) is toward the carbon pile tube (7). Radiator spacer prevents radiator from shorting out on contact plate.

j. Without touching with the fingers, slide a new carbon pile (5) out of its glass container and onto a clean, smooth 1/8-inch rod or equivalent tool. Gently shake the rod to separate the pile discs and inspect for broken discs. Insert the rod into the carbon pile tube (7) until the rod touches the contact on the end of the rod and contact assembly (8). Tip the unit and rod to allow the discs to slide into the carbon pile tube. Withdraw the rod and gently tap the assembly to insure that all discs are level.

CAUTION

If there is evidence that the carbon pile or container has been tampered with, discs added or removed, use a new carbon pile.

k. Assemble the contact and plate assembly (1) to the radiator studs (18) using four nuts (2) and lock washers (3). The contact protruding from the contact and plate assembly must be toward the same side as the armature counterweight (12). Ref. figure 9-6 or 9-7.

l. Install adjusting screw (10, figure 4-4) with sheet spring nut (11) in the hole in center of armature assembly (12).

9-8. ADJUSTING AMPLIFIERS.

9-9. VOLTAGE CARBON PILE AMPLIFIER.

a. Insert a piece of non-magnetic shim material, 0.004 inch thick, between the top of the armature assembly (12) and the plate and core assembly (23).

b. Connect 150 volts DC to the blue and white lead. Connect an ohmmeter, capable of reading accurately from 0-10 ohms and 0-300 ohms, between the amplifier frame and the contact and plate assembly.

c. To set minimum resistance apply the voltage and turn the adjusting screw (10) until a 1-1/2 ohms reading is obtained. Cut and apply voltage three or four times to check that the reading holds consistently.

d. To set maximum resistance remove the shim and disconnect the power source. Loosen the two screws (13) attaching the fulcrum spring (17). Slide the fulcrum spring up and down until a reading of from 160 to 200 ohms is obtained. Tighten the screws (13) when this reading is obtained. After setting, energize coil three or four times and check that the reading is constant.

9-10. FREQUENCY CARBON PILE AMPLIFIER.

9-11. The frequency carbon pile amplifier is adjusted in the same manner as described for voltage carbon pile amplifier in paragraph 9-9, except that the ohm reading when adjusting minimum resistance is 3 ohms;

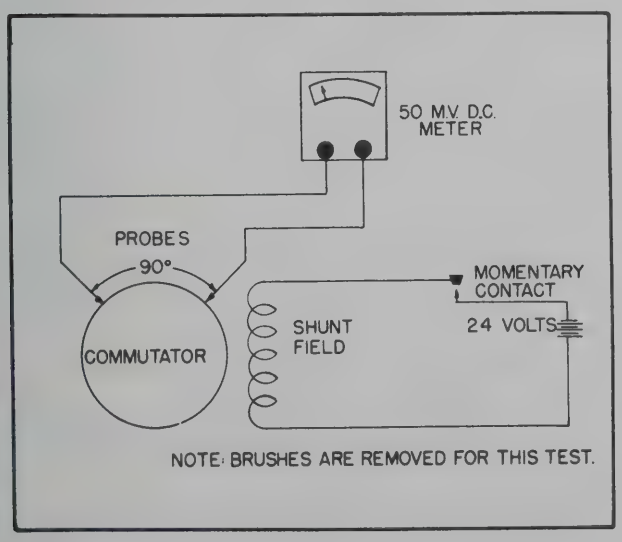


Figure 9-4. Neutral Setting Wiring Diagram

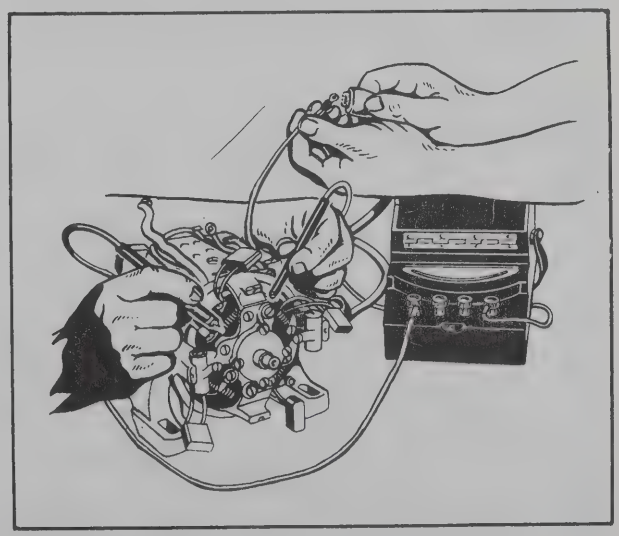


Figure 9-5. Neutral Setting

for maximum resistance the fulcrum spring must be set to obtain a reading of 200 to 300 ohms.

9-12. COMPLETING AMPLIFIER ASSEMBLY. (See figure 4-4.)

9-13. After making the necessary adjustments, snap the cover (9) into position over the armature (12).

9-14. REASSEMBLY OF CIRCUIT BOARD ASSEMBLY. (See figure 4-3.)

a. Assemble the rheostat (3) to the rheostat mounting bracket (4).

b. Attach the rheostat mounting bracket (4) with the reactor assembly (5) and transformer (7) to the panel (28) using two screws (6 and 8).

c. Install tubes and components in accordance with the following:

CAUTION

Electron tubes used in this inverter are matched sets. If any tube is defective, all tubes must be replaced by a new set.

d. Solder joints shall be neat and smooth, without pinholes, peaks or sharp protrusions. The solder surface shall be bright, glossy and flux free. Use materials only as specified below, or approved equivalents. Do not use excessive amounts of solder. Do not use touch-up enamel on internal mechanisms and external slide-mating surfaces of moving parts.

e. The following materials are to be used when replacing a part: Flux cored solder or 0.043-inch diameter solid solder (Liquid flux may be used in place of the solid solder); Isopropyl alcohol; Clear insulating touch-up enamel; Solvent (for touch-up enamel).

f. After locating defective component(s), carefully remove the part(s) without disturbing the adjacent components or their protective coatings. When defective component(s) incorporate(s) common solder junctions with other components, do not disturb the common joints unless the terminal leads of the defective part cannot be used as splice stubs for the replacement part. Upon removal of desired parts, take the following steps in exact sequence to install the replacement part:

g. Thoroughly clean all disturbed terminations by abraising or scraping the protective coating from the intended connection surfaces.

h. Wipe the terminal surfaces with a clean cloth dampened with alcohol.

i. Insert replacement part in identical location and disposition as previous part, or in specified new location. Resultant lead lengths and required insulation should closely approximate the amounts and types used on the original installation.

j. Complete splices by mechanical methods (hook, twist, insertion, etc.) and replace any component supports. Solder junction using materials specified. Use conductive transfer heating methods, only, in the replacement of parts, i.e. soldering irons, guns, pencils, etc. Do not apply direct flame to any components.

CAUTION

The maximum temperature resistance of the majority of the components involved range to 250° F (121° C). Exercise care that soldering operations at terminations do not result in excessive thermal transfer through leads or supporting members.

k. Wash flux residues from solder joints with alcohol

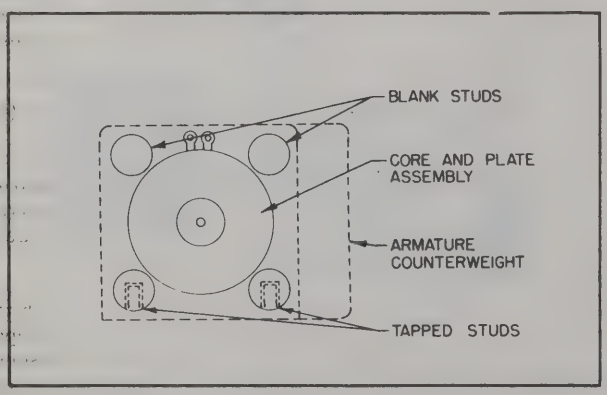


Figure 9-6. Assembly Voltage Amplifier

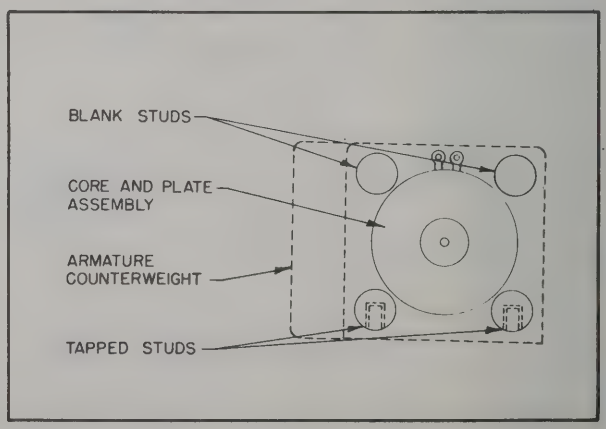


Figure 9-7. Assembly Frequency Amplifier

and recoat all disturbed components and junctions with insulation enamel by brush application of a mixture of three (3) parts enamel to two (2) parts solvent.

NOTE

This treatment should result in the application of a continuous smooth, encompassing film which has reblended into the original coating at all contact surfaces between the supporting plate and components. Successive applications may be required to obtain a satisfactory protective film of between two (2) and three (3) mils. Care must be exercised to exclude airborne dust, fumes, or dirt from the area during the touch-up or drying periods. Brushes must be kept clean and pliable.

1. Dry the touch-up enamel as follows: Between coats; air dry two hours or bake 1/2 hour at 190° F (88° C). Final coat; air dry four hours or bake one hour at 190° F (88° C).

9-15. REASSEMBLY OF VOLTAGE AND FREQUENCY CONTROL. (See figure 4-2.)

a. Position the circuit board assembly (20) on the shock frame base subassembly (15) and fasten with two screws (16), washers (17), standoff posts (18) and washers (19).

NOTE

The standoff posts (18) also attach the free ends of the reactor (5, figure 4-3) and transformer (7) to the shock frame base assembly (15, figure 4-2).

b. Assemble the frequency amplifier assembly (13) to the shock frame with three screws (11). Make the electrical connections in accordance with the wiring diagram, figure 3-3.

c. Assemble voltage amplifier assembly (10, figure 4-2) to the shock frame with three screws (8). Make the electrical connections in accordance with the wiring diagram, figure 3-3.

d. Assemble leads with terminals (9 and 12, figure 4-2) to the amplifiers. Wrap a piece of friction tape around the control leads to protect the insulation from the retainer clip.

e. Assemble a grommet (14) to the leads and position the harness assembly in the clip of the shock frame base assembly (15) with four screws (7) and two screws (6).

NOTE

Apply Glyptal, or equivalent, to the threads of the two screws (6) before reassembly.

g. Compress the shock fingers and slide the voltage and frequency control (4) into the container and friction plate assembly (3). Position the two retainer plate assemblies (1) and fasten with two screws (2) in each plate.

NOTE

The voltage and frequency control assembly must be positioned in the container and friction plate assembly so that the harness assembly extends out through the round hole adjacent to the lead clip.

h. Install the harness assembly in the lead clip of the container and friction plate assembly (3).

9-16. CONTROL BOX BASE ASSEMBLY. (See figure 4-5.)

a. Insert the connectors (58 and 59) into the proper holes in the voltage adjusting plate (60). Set this assembly in place on the connector end of the control box base (61). Attach to the threaded end of the connector and lead assemblies, the attaching nuts, and tighten until they are secured to the control box base.

b. Set the rheostat (57) in place in the control end of the control box base (61). Attach with nut and washer provided.

c. Solder all leads onto the connector (55). See the wiring diagrams (figs. 3-2 and 3-3) for proper location of leads. Attach the connector to the control box base (figure 4-5) with screws (53) and washers (54).

d. Solder the proper leads to the capacitor (56). Hold the capacitor in place with the clamp (48). Attach the clamp cap with the screws (49 and 50) and the washers (51 and 52). Attach the cable clip (43) with the screw (44), washers (45 and 46) and the nut (47).

e. Attach the bracket cap assembly (37) with the screws (38 and 41), washers (39 and 42) and spacers (40). Solder the proper leads to the capacitors (36). Hold the capacitors (36) in place with the double clamp (34). Attach the double clamp with the screw (35).

f. Attach the connector (28) and the bracket (29) with the screws (25 and 26) and washers (27). Open the clamp (30) and insert the leads of the connector (28). Attach the clamp (30) to the bracket (29) with the screw (31) and the washers (32 and 33).

g. Attach the undervoltage relay (24) with the screw (20) and the washers (21 and 22). Insert the flathead screw (19) in the side of the control box base (61) and thread into the clinch nut of the undervoltage relay (24).

h. Attach the cable clip (15) with the screws (16) and the washers (17 and 18).

i. Attach the terminal board (8) and the designation plate (11) with the screws (9) and the washers (10). Connect all leads to the terminal board (8). See figure 3-2 for the proper hook-up of the leads.

j. Attach the terminal block (4, figure 4-5) with the screw (5) and washers (6 and 7). Connect the proper leads to the terminal block (4) as shown on the schematic wiring diagram (figure 3-3). Hold the leads in place with the nut (1, figure 4-5) and the washers (2) and strap (3).

9-17. VOLTAGE RHEOSTAT.

9-18. Assemble the voltage rheostat (57, figure 4-5) to the end of the control box base (61) with a voltage adjusting plate (60). Attach to the control box base with attaching nut of rheostat. Connect the leads to proper terminals of board (8).

SECTION X

FINAL REASSEMBLY

10-1. ASSEMBLING VOLTAGE AND FREQUENCY CONTROL TO CONTROL BOX BASE ASSEMBLY. (See figure 4-1.)

a. Connect the leads from the voltage and frequency control assembly (8), marked "1", "2", "3", "4", "5", "6", "7", and "8" to the respective markings on the terminal strip in the bottom of the control box base assembly (11).

b. Position the voltage and frequency control (8) in the control box base assembly, and attach with four screws (9).

10-2. ASSEMBLY OF CONTROL BOX BASE ASSEMBLY ON MOTOR-GENERATOR. (See figure 4-1.)

a. Position the AC end cover (6, figure 4-6) on the AC shield assembly and attach with four screws (7) and washers (8).

b. Assemble the fan cover (1) to the DC end bell (21), with screws (2) and washers (3).

c. Assemble the control box lid (7, figure 4-1) to the control box and turn the studs 1/4 turn to lock in position. Insert the screws (1) and washers (2) and tighten.

NOTE

The control box lid is designed to fit only one way on the assembly. This is controlled by the position of the two studs in the lid.

9-17. VOLTAGE RHEOSTAT.

9-18. Assemble the voltage rheostat (57, figure 4-5) to the end of the control box base (61) with a voltage adjusting plate (60). Attach to the control box base with attaching nut of rheostat. Connect the leads to proper terminals of board (8).

SECTION X

FINAL REASSEMBLY

10-1. ASSEMBLING VOLTAGE AND FREQUENCY CONTROL TO CONTROL BOX BASE ASSEMBLY. (See figure 4-1.)

a. Connect the leads from the voltage and frequency control assembly (8), marked "1", "2", "3", "4", "5", "6", "7", and "8" to the respective markings on the terminal strip in the bottom of the control box base assembly (11).

b. Position the voltage and frequency control (8) in the control box base assembly, and attach with four screws (9).

10-2. ASSEMBLY OF CONTROL BOX BASE ASSEMBLY ON MOTOR-GENERATOR. (See figure 4-1.)

a. Position the AC end cover (6, figure 4-6) on the AC shield assembly and attach with four screws (7) and washers (8).

b. Assemble the fan cover (1) to the DC end bell (21), with screws (2) and washers (3).

c. Assemble the control box lid (7, figure 4-1) to the control box and turn the studs 1/4 turn to lock in position. Insert the screws (1) and washers (2) and tighten.

NOTE

The control box lid is designed to fit only one way on the assembly. This is controlled by the position of the two studs in the lid.

SECTION XI

DEPOT OVERHAUL STANDARDS

11-1. APPLICABILITY OF DEPOT OVERHAUL STANDARDS. The tests outlined in this section are designed to measure the performance capability of a repaired equipment. Equipment that is to be returned to stock should meet the standards given in these tests.

11-1.1. APPLICABLE REFERENCES. Applicable procedures of the Army depots performing these tests and the general standards for repaired electronic equipment given in TB SIG 355-1, TB SIG 355-2, and TB SIG 355-3 form a part of the requirements for testing this equipment.

11-1.2. MODIFICATION WORK ORDERS. Perform all modification work orders applicable to the PU-572/A before making all tests specified. DA Pam 310-7 lists all available MWO's.

11-1.3. INSPECTION.

11-2. Inspect the complete unit for workmanship and any obvious mistakes in assembly.

11-3. TESTING.

11-4. TEST EQUIPMENT REQUIRED.

a. Test Set, Motor-Generator AN/GSM-65.

b. Load bank as shown in figure 2-1 if AN/GSM-65 is not available.

11-5. PERFORMANCE TEST.

NOTE

Refer to figure 3-6 for performance ratings when testing the inverter. All load tests should perform **at** unity power factor.

a. It is not necessary to warm up the inverter prior to the performance tests if these tests are made immediately after brush run-in.

a.1. Connect the inverter to the AN/GSM-65, if available, or to the load bank and test circuit shown in figure 2-1 and proceed as follows.

b. Operate the inverter at no load. Turn the voltage adjustment rheostat through its full range. Minimum range of adjustment should be from 109 to 125 volts. **(Fig. 1-2)**

c. Repeat step b. at full load.

d. Operate the inverter at no load. Turn the frequency adjustment rheostat through its full range. Minimum range of adjustment should be from 392 to 408 CPS. **(Fig. 1-2)**

e. Repeat step d. at full load.

f. At no load **vary** the input voltage from 26 volts DC to 29 volts DC. Output voltage should not vary more than 2.0 volts/phase. The frequency should not vary more than 8 CPS.

g. Repeat step f. at full load.

h. At constant input voltage, vary load from no load to full load. Voltage variation should be less than 2.0 volts. The frequency should not vary more than 8 CPS.

APPENDIX A

REFERENCES

Following is a list of applicable references that should be available to the organizational, DS, GS, and depot maintenance personnel for the PU-572/A:

DA Pam 310-4	Index of Technical Manuals, Technical Bulletins, Supply Manuals (types 7, 8, and 9), Supply Bulletins, Lubrication Orders, and Modification Work Orders.
DA Pam 310-7	Military Publications: Index of Modification Work Orders.
SB 38-100	Preservation, Packaging and Packing Materials, Supplies, and Equipment used by the Army.
TB SIG 355-1	Depot Inspection Standard for Repaired Signal Equipment.
TB SIG 355-2	Depot Inspection Standard for Refinishing Repaired Signal Equipment.
TB SIG 355-3	Depot Inspection Standard for Moisture and Fungus Resistant Treatment.
TB SIG 364	Field Instructions for Painting and Preserving Electronics Command Equipment.
TM 11-2050	Test Set I-48-B and Ohmmeter ZM-21A/U.
TM 11-5097	Spectrum Analyzers TS-723A/U, TS-723B/U, TS-723C/U, and TS-723D/U.
TM 11-5527	Multimeters TS-352/U, TS-352A/U, and TS-352B/U.
TM 11-6625-203-12	Operator and Organizational Maintenance: Multimeter AN/URM-105, Including Multimeter ME-77/U.
TM 11-6625-273-12	Operation and Organizational Maintenance: Insulation Breakdown Test Sets AN/GSM-6 and AN/GSM-6A.

TM 11-6625-274-12	Operator's and Organizational Maintenance Manual: Test Sets, Electron Tube TV-7/U, TV-7A/U, TV-7B/U, and TV-7D/U.
TM 11-6625-303-12	Operator and Organizational Maintenance Manual: Electrical Power Test Sets AN/UPM-93 and AN/UPM-100.
TM 11-6625-316-35	Field and Depot Maintenance Manual: Test Sets, Electron Tube TV-2/U, TV-2A/U, TV-2B/U, and TV-2C/U.
TM 11-6625-535-15	Organizational, DS, GS, and Depot Maintenance Manual: Oscilloscope AN/USM-140A.
TM 11-6625-680-15	Organizational, DS, GS, and Depot Maintenance Manual: Test Set, Motor-Generator AN/GSM-65.
TM 38-750	Army Equipment Record Procedures.

APPENDIX B

BASIC ISSUE ITEMS

Section I. INTRODUCTION

B-1. General

The equipment described in this appendix is for Motor Generator PU-572/A. There are no items required for installation, operation, or operator's maintenance.

B-2. Explanation of Columns

An explanation of the columns in section II is given below.

a. Source, Maintenance, and Recoverability Codes, Column 1. Not used.

b. Federal Stock Number, Column 2. The Federal stock number for the item is indicated in this column.

c. Description, Column 3. The Federal item name, a brief description and a part number are included in this column.

d. Unit of Issue, Column 4. The unit used as a basis of issue (e.g. ea, pr, ft, yd, etc) is noted in this column.

e. Quantity Incorporated In Unit Pack, Column 5. Not used.

f. Quantity Incorporated In Unit, Column 6. Not used.

g. Quantity Authorized, Column 7. The total quantity of an item required to be on hand and necessary for the operation and maintenance of the equipment is given in this column.

h. Illustration, Column 8. Not used.

Section II. BASIC ISSUE ITEMS LIST

(1) SOURCE CD (A)	(1) MAINT. CD (B)	(1) REC. CODE (C)	(2) Federal stock number	Model 1	2	3	4	5	6	(3) Description	(4) Unit of issue	(5) Qty inc in unit pack	(6) Qty inc in unit	(7) Qty auth	(8) Illustrations (A) Figure number	(8) Illustrations (B) Item or symbol number
			6125-660-8100							MOTOR GENERATOR PU-572/A: Output data, ac; 400 cycles, 750 va rating; 200 v line to line; 115 v line to neutral; 3 phase; input data, 28 v, dc; 11.8125 in lg X 7.15625 in w X 9.71875 in h; MIL type MS25095 (This item is nonexpendable.)	ea					
										TECHNICAL MANUAL 11-6125-224-25 ----------	ea	----	----	1		
										Requisition through pinpoint account number if assigned; otherwise through nearest Adjutant General facility.						
										NO PARTS AUTHORIZED USER, OPERATOR, CREWMAN						
										NO ACCESSORIES, TOOLS, OR TEST EQUIPMENT ARE TO BE ISSUED WITH THIS EQUIPMENT						
										NO BASIC ISSUE ITEMS ARE MOUNTED IN OR ON THIS EQUIPMENT						

APPENDIX C

MAINTENANCE ALLOCATION

Section I. INTRODUCTION

C-1. General

This appendix provides a summary of the maintenance operations covered in the equipment literature for Generator Set PU-572/A. It authorizes categories of maintenance for specific maintenance functions on repairable items and components and the tools and equipment required to perform each function. This appendix may be used as an aid in planning maintenance operations.

C-2. Explanation of Format for Maintenance Allocation Chart

a. Group Number. Group numbers correspond to the reference designation prefix assigned in accordance with ASA Y32.16, Electrical and Electronics Reference Designations. They indicate the relation of listed items to the next higher assembly.

b. Component Assembly Nomenclature. This column lists the item names of component units, assemblies, subassemblies, and modules on which maintenance is authorized.

c. Maintenance Function. This column indicates the maintenance category at which performance of the specific maintenance function is authorized. Authorization to perform a function at any category also includes authorization to perform that function at higher categories. The codes used represent the various maintenance categories as follows:

Code	Maintenance Category
C	Operator/Crew
O	Organizational Maintenance
F	Direct Support Maintenance
H	General Support Maintenance
D	Depot Maintenance

d. Tools and Equipment. The numbers appearing in this column refer to specific tools and equipment which are identified by these numbers in section III.

e. Remarks. Self explanatory.

C-3. Explanation of Format for Tool and Test Equipment Requirements

The columns in the tool and test equipment requirements chart are as follows:

a. Tools and Equipment. The numbers in this column coincide with the numbers used in the tools and equipment column of the MAC. The numbers indicate the applicable tool for the maintenance function.

b. Maintenance Category. The codes in this column indicate the maintenance category normally allocated the facility.

c. Nomenclature. This column lists tools, test, and maintenance equipment required to perform the maintenance functions.

d. Federal Stock Number. This column lists the Federal stock number.

e. Tool Number. Not used.

Section II. MAINTENANCE CHART

Group number	Component assembly nomenclature	Maintenance functions											Tools and equipment	Remarks
		Inspect	Test	Service	Adjust	Align	Calibrate	Install	Replace	Repair	Overhaul	Rebuild		
	MOTOR-GENERATOR PU–572/A	O	O	O	O	--	--	O	O	F	H	D	1 thru 18	
1	INVERTER	O	F	O	O	--	--	F	F	F	H	D	1 thru 16	
	ARMATURE ASSEMBLY	F	F	F	--	--	--	F	F	H	H	D	4 thru 16	
	STATORS	--	F	--	--	--	--	H	H	H	--	D	4 thru 16	
	BEARINGS	F	--	--	--	--	--	F	F	--	--	--	9	
	END BELL ASSEMBLIES	F	H	F	H	--	--	H	H	H	H	D	9	
	BRUSHES	O	--	F	F	--	--	F	F	--	--	--	9	
2	REGULATOR	O	O	O	O	--	--	F	F	F	H	H	1 thru 6,9, 16,17,18	
	CONTROL GROUP	F	F	F	F	--	--	F	F	F	H	H	4,5,6,9,16, 17,18	

TOOL AND TEST EQUIPMENT REQUIREMENTS

TOOLS AND EQUIPMENT	MAINTENANCE CATEGORY	NOMENCLATURE	FEDERAL STOCK NUMBER	TOOL NUMBER
		PU-572/A (continued)		
1	O	TOOL KIT, ELECTRONIC EQUIPMENT TK-105/U	5180-610-8177	
2	O,F	TEST SET, ELECTRICAL POWER AN/UPM-93	6625-581-2097	
3	O	MULTIMETER AN/URM-105	6625-581-2036	
4	F,H,D	TEST SET, MOTOR GENERATOR AN/GSM-65	6625-348-5793	
5	F,H,D	OSCILLOSCOPE AN/USM-140A	6625-892-4401	
6	F,H,D	MULTIMETER TS-352/U	6625-242-5023	
7	F,H,D	BRIDGE, RESISTANCE ZM-4B/U	6625-500-9037	
8	F,H,D	TEST SET, ARMATURE TS-965/U	6625-828-5810	
9	F,H,D	TOOL KIT, ELECTRONIC EQUIPMENT TK-100/U	5180-605-0079	
10	F,H,D	BRUSHES, DUMMY		
11	D	DYNAMIC BALANCING MACHINE		
12	D	LATHE		
13	D	OHMMETER ZM-21A/U	6625-581-2466	
14	D	TEST SET INSULATION BREAKDOWN AN/GSM-6	6625-868-8326	
15	D	VIBROMETER	6635-494-1553	
16	D	ANALYZER, SPECTRUM TS-723( )/U	6625-668-9418	
17	D	TEST SET, ELECTRON TUBE TV-2/U	6625-699-0263	
18	F,H	TEST SET, ELECTRON TUBE TV-7/U	6625-820-0064	

By Order of the Secretary of the Army:

HAROLD K. JOHNSON,
General, United States Army,
Chief of Staff.

Official:
KENNETH G. WICKHAM,
Major General, United States Army,
The Adjutant General.

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